The IRON AGE

August 6, 1959 A Chilton Publication The National Metalworking Weekly

An Important New Series for Management

The Problem Employee

- Why He Is One
- How to Handle Him
- The "Impossible" Case

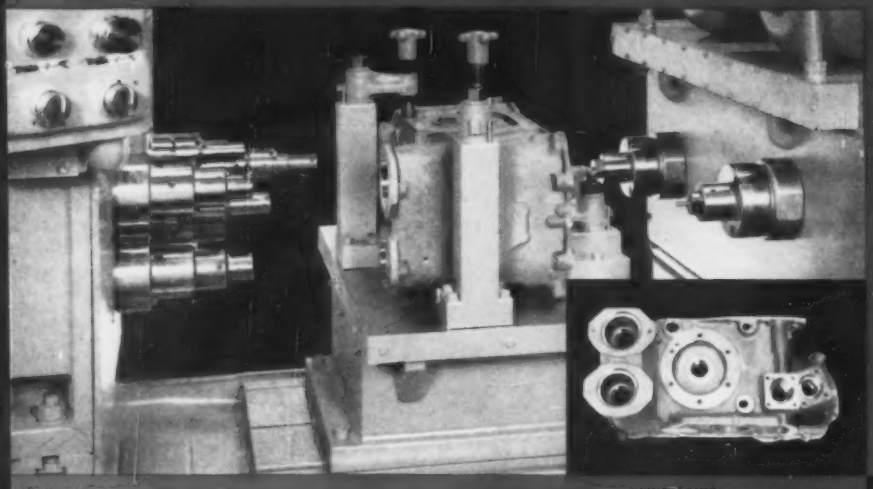
This Week: Why Management Can't Understand Him —P. 51

How Steel Profits Figure in Strike — P. 41

Weld Tubing Faster — P. 79

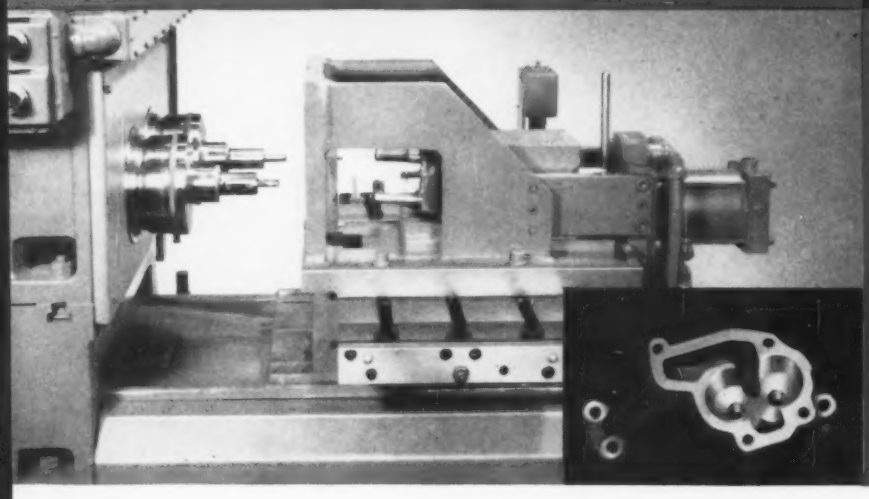
Digest of the Week — P. 2-3

Standard Ex-Cell-O Precision Boring Machines



. . . FOR FASTER MULTIPLE-HOLE WORK

Standard style 17-A performs 26 operations in one cycle on a magnesium aircraft casting. Machine bores five bronze bushings, counterbores seven diameters, faces four surfaces and chamfers eight shoulders with five spindles at left, two spindles at right.



. . . FOR FASTER CLOSE-TOLERANCE WORK

Style 112-D finish-bores gear pockets and shaft holes, and plunge-faces pocket bottoms of oil pump bodies to tolerance of plus or minus .0005". Flat faces are square to the bores and parallel to each other within working limits of .001".

59-17

10 REASONS WHY EX-CELL-O PRECISION BORING MACHINES DO MORE, AT LESS COST!

1. RUGGED—Heavily-ribbed base castings, chatter-free hydraulic-actuated table movement, isolated power assembly.

2. FLEXIBLE—Bridges easily spaced-out for large work, moved in for smaller parts.

3. VERSATILE—Inbuilt versatility, plus Universal Fixtures for toolroom work, short-run and production jobs. Spindles mount in any position.

4. FAST—Rapid table traverse, positive spindle brakes and quick-load fixtures for high output.

5. LOW TOOLING COST—Standard machine components, tools and accessories cut lead time, speed setup.

6. AUTOMATIC LUBRICATION—Separate lubricating system pumps oil directly to the ways.

7. SEALED SPINDLES—Ex-Cell-O Precision Spindles permanently lubricated during assembly.

8. CONVENIENT CONTROLS—Easy to use hydraulic controls contained in a single panel.

9. TROUBLE-FREE—Vital machine parts and controls protected from dirt, chips, coolant. Ready access to components for inspection.

10. CAMS FOR CONTOURING—Cam-operated boring machines available for precision contouring work.

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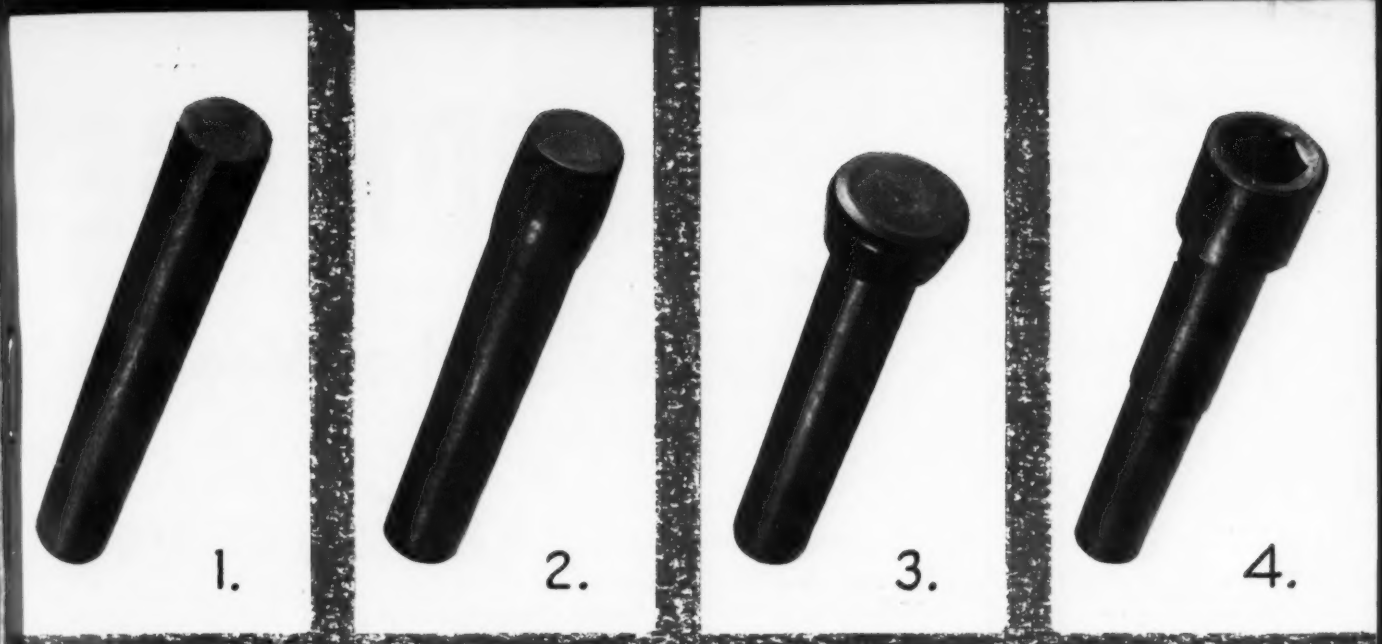

In 6 steps with Bethlehem cold-heading wire

Using Bethlehem C4037 heading-quality wire, this ¾ by 4-in. socket-head cap screw is produced in six quick steps:

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3. Heading
4. Extrusion
5. Trimming
6. Roll threading and knurling

The whole sequence is performed "cold." And it produces a cap screw free from the surface weaknesses of machined parts. Scrap loss is minimized because virtually the whole blank is utilized in the finished screw. Cold-heading wire is usually more economical than screw-machine stock; savings often come to 10 pct and more.

Bethlehem makes just about every kind of heading-quality wire. Manufacturing is rigidly controlled. Frequent mill tests assure proper surface quality, chemical composition, and internal soundness.

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Indexed in Applied Science & Technology Index and Engineering Index.

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THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.50. Cable: "Ironage," Philadelphia.

The IRON AGE

August 6, 1959—Vol. 184, No. 6

Digest of the Week in

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RECORD STEEL PROFITS

They Affect the Strike—Steel companies clung to their hold-the-line policy on prices and wages despite record profit reports. But timing of the announcement gives labor a weapon. P. 41

BLOUGH SPEAKS UP

Big Steel Lays It on Line—U. S. Steel chairman Roger Blough says

there will be no steel price boost if strike is settled by voluntary agreement. But he warns of possible consequences of government-dictated pact. P. 43

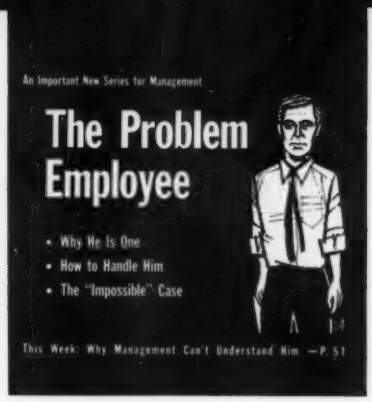
DEPRECIATION

Better Hearing—Industry's views on depreciation are getting a more sympathetic hearing these days in Washington. However, it may be many months before the change is translated into hope of tax relief. P. 44

UNEMPLOYMENT PAY

Ruling Haunts Automakers —

Metalworking


An Important New Series for Management
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• How to Handle Him
• The "Impossible" Case
This Week: Why Management Can't Understand Him —P. 51

◀ COVER FEATURE

PERSONNEL HEADACHE: The problem employee is one of the most common hidden costs in business. In the first of a three part series, Dr. R. N. McMurry describes the several types of problem people and how they got that way. P. 51

Auto companies fear Michigan unions will take advantage of a state supreme court ruling to augment strike funds. P. 46

LABOR REFORM ACTION

Showdown Coming—Congress is unlikely to put off action on labor reform legislation much longer. A battle looms over amendments to "inept" bills approved in by House and Senate committees. P. 59

FEATURE ARTICLES

SPIRAL WELD TUBING

At High Speeds—A new welding concept puts all its energy to work converting strip materials to finished tubing at very high speeds. It turns out helically welded tubing 0.004 in. thick at 1000 fpm. P. 79

RECORD I-BEAM WEIGHTS

With Electronic Scale—Whole I-beams as long as 40 ft and weighing 2500 lb are being weighed right after rolling with an electronic system. Flashed signals keep I-beam tolerances in line. P. 82

ULTRASONICS AIDS CASTING

Cuts Grain Growth—While previous work with ultrasonics has been on small parts, this test on a forging ingot points up the benefits of ultrasonic treatment on a larger scale in a vacuum arc furnace. It's now safe to say that castings weighing up to at least 1-2,000 lb can be treated with reasonable amounts of vibration energy. P. 84

INFLATE STRIP FOR TUBING

A Compact System—Strip tubing, shipped as a ribbon, then blown up at point of use, will soon be on the market. The fact that the thinwall seamless tubing will be shipped as a ribbon means that there'll be less bulky handling and lower shipping costs. P. 88

HANDLING STRUCTURALS

In Semiautomatic Line—A three station line cuts manpower requirements from 27 men to four machine operators. Aside from cutting structural steel to length, the new setup drills holes in webs and flanges. P. 90

MARKETS & PRICES

NEW CAR PREVIEW

A Glimpse at 1960—Automakers are putting more emphasis on driver comfort in their 1960 models. Floor humps will be lower, seat positions improved. For the most part, styling changes will be minor. P. 55

PLANE BUILDERS

Branching Out — Diversification fever is catching on with giant aircraft and missile manufacturers. They're going into everything from computers to reactors and machine tools. P. 61

TOOL SALES PICKUP

Gaining Momentum—June was the best month for tool builders in two years. There is every indication the trend will continue through the second quarter. P. 63

AFTER THE STRIKE

Into Production—The longer the strike lasts, the longer it will take the mills to get into production. Refractory damage increases with strike length. Another factor: Ore supplies may be hard hit. P. 109

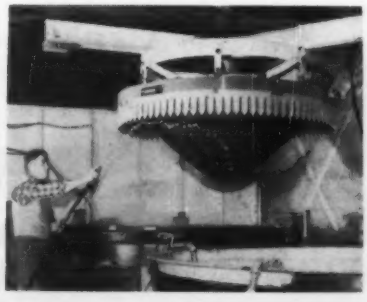
PURCHASING AGENTS

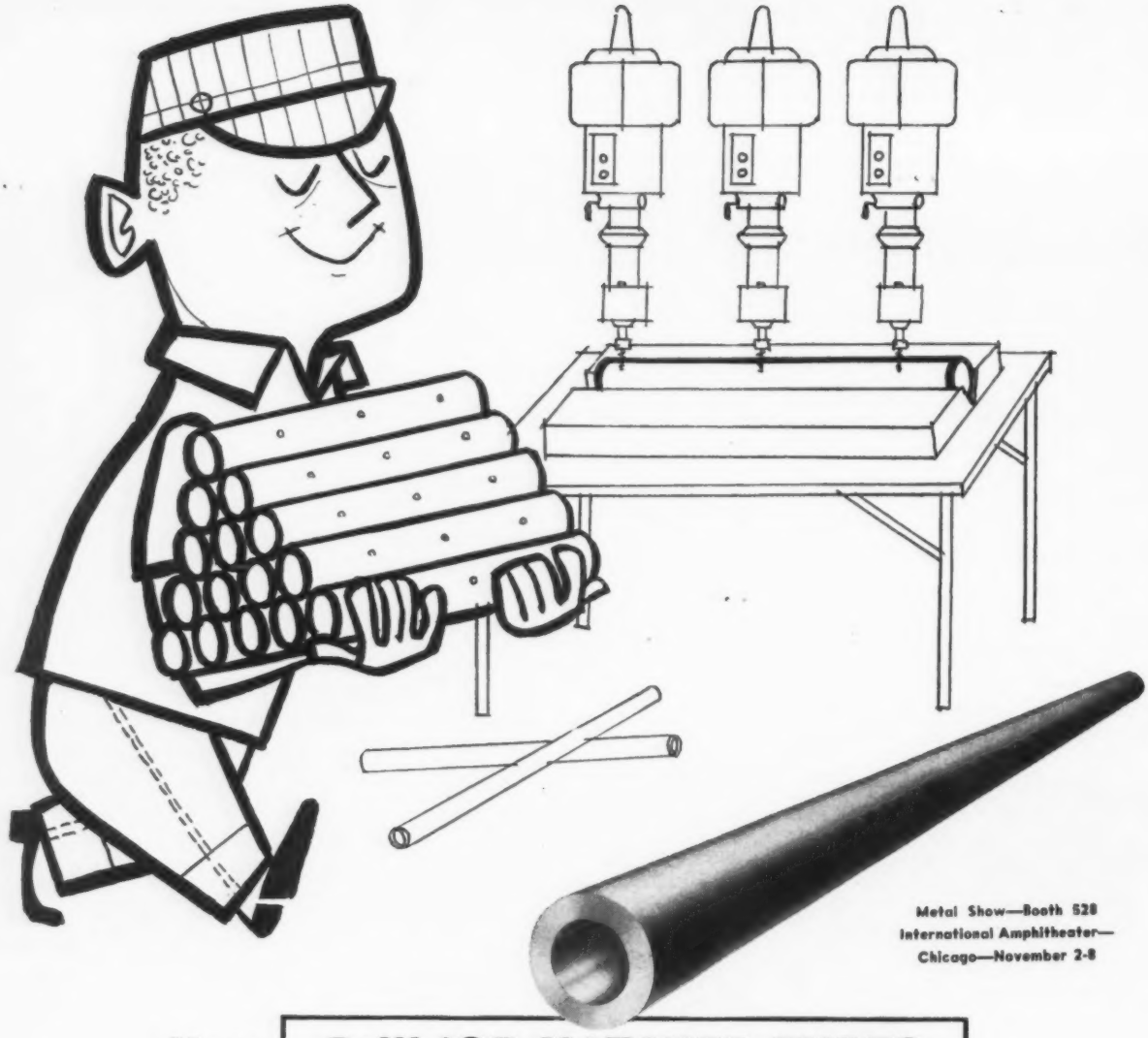
Developing the Man—The purchasing agents rating with management will depend on how he develops. NAPA officer offers some tips on how to gain stature. P. 110

NEXT WEEK

PLATING NOSE CONES

With Low Tooling Costs—In the development stage of a missile program tooling cost must be held to a bare minimum. Next week's technical feature tells how one setup holds costs down without sacrificing production flexibility.





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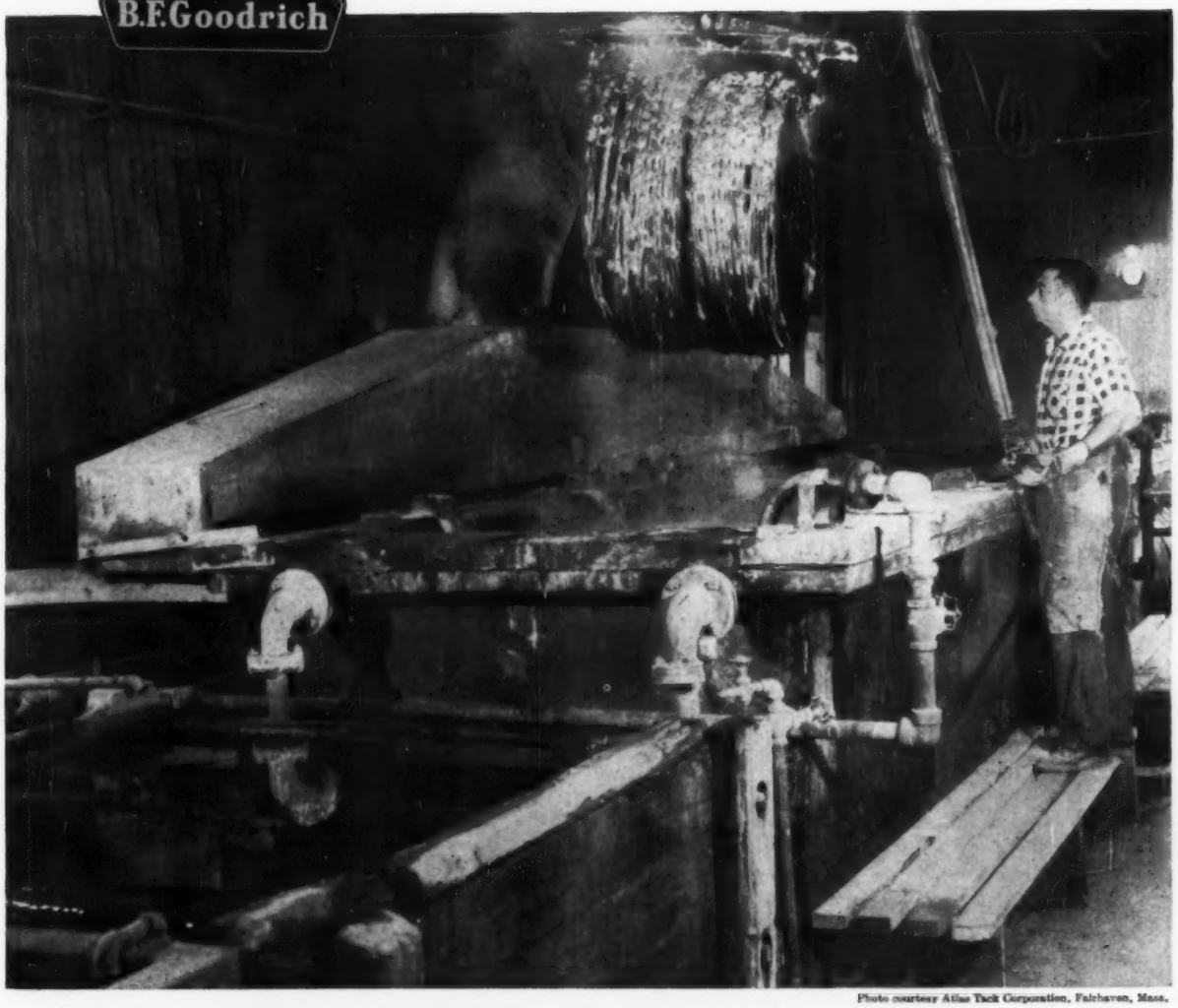

Photo courtesy Atlas Tack Corporation, Fairhaven, Mass.

1400-gallon cup of hot acid

B. F. Goodrich improvements in rubber brought extra savings

FOR many years, this job of cleaning rust and scale off coils of steel rods was done in tanks made of thick cypress planks. But tanks shrunk under the bite of hot acid, had to be calked and patched frequently, and were lasting only about a year.

A leakproof tank seemed impossible until B.F.Goodrich engineers came up with something entirely new in the way of a protective lining. They developed a combination lining of hard rubber sandwiched between layers of soft rubber that stands the most corrosive acids. This B.F.Goodrich "Triflex" lining, as it is called, is permanently attached to a steel tank, then protected from excessive heat, rips and tears by a sheathing of brick.

The waste and hazard of acid leaks stopped wherever this B.F.Goodrich lining was used. The tanks in the picture were lined by this method 10 years ago. Since then they've been in use 16 hours a day, have required virtually no repairs or maintenance. The company figures that in terms of useful service each tank has only cost them about 50¢ a day.

In the past 35 years, B.F.Goodrich has rubber lined thousands of tanks to handle acids and other corrosives. Some are still in use; others lasted 15 or 20 years. Not one ever failed to end costly shutdowns for repairs. When you specify tank linings, remember that the true cost is the price divided by the years of satisfactory service. On that basis, your cost will be lowest when you specify B.F.Goodrich. *B.F.Goodrich Industrial Products Co., Dept. M-641, Akron 18, Ohio.*

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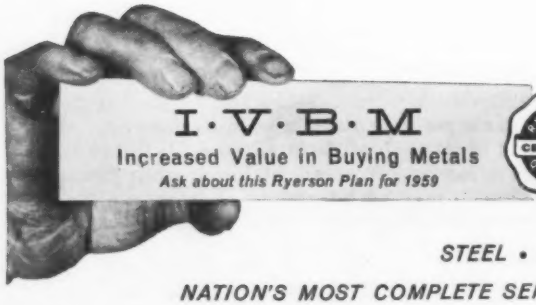

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Substantial Profits: Something To Be Proud Of

When the Steelworkers cry "shame" because steel companies made a good profit they are barking up the wrong tree.

There should be no such thing as being ashamed of a good profit. Companies which don't show a profit should not be an example for other firms to strive for.

Dave McDonald's tirades against "huge" profits in steel are understandable. But that doesn't mean he has a point. He hasn't. Ability to pay isn't the total bargaining criterion.

If you and I lay up some money and are a little closer to Easy Street, is that any reason for our kids to say "look at all the dough you have, why don't we get some of it?" After all, it is our money and we do have uses for it that the kids could not understand because they are not in our shoes.

Maybe this isn't exactly akin to the Steelworkers' cry but the general idea is the same. Steel company profits belong to the stockholders. If they are good, everyone gains—management, employees and government (taxes).

Customers gain, too, because steel firms will be able to more-rapidly renovate, modernize and expand. That means more steel at a lower price, unless labor costs take an unfair percentage of the total.

Steel used to be a "prince and pauper" industry. Both the companies and the workers suffered from this. Then came better management, more productivity, and better cooperation between labor and management. Then the unions got greedy.

Soon the government came into the picture. Many wage settlements were forced on the industry. Wages went up faster by far than did earnings per sales dollar. Had it not been for better equipment, research, new marketing techniques, and price increases, the steel industry would now be a poor one.

Wage increases followed by price increases were overdone long ago. Steel management knew this but was stymied in doing something about it. Now it has taken a stand. Now the union ought to do a little hard-headed thinking—about the future. Then it may realize that the jig is up.

A strong and profitable steel industry benefits labor. A more cooperative labor would benefit the industry—and itself.

Profit is a proud word, not a weasel word to be scoffed at by those who can't make it!

Tom Campbell

Editor-in-Chief

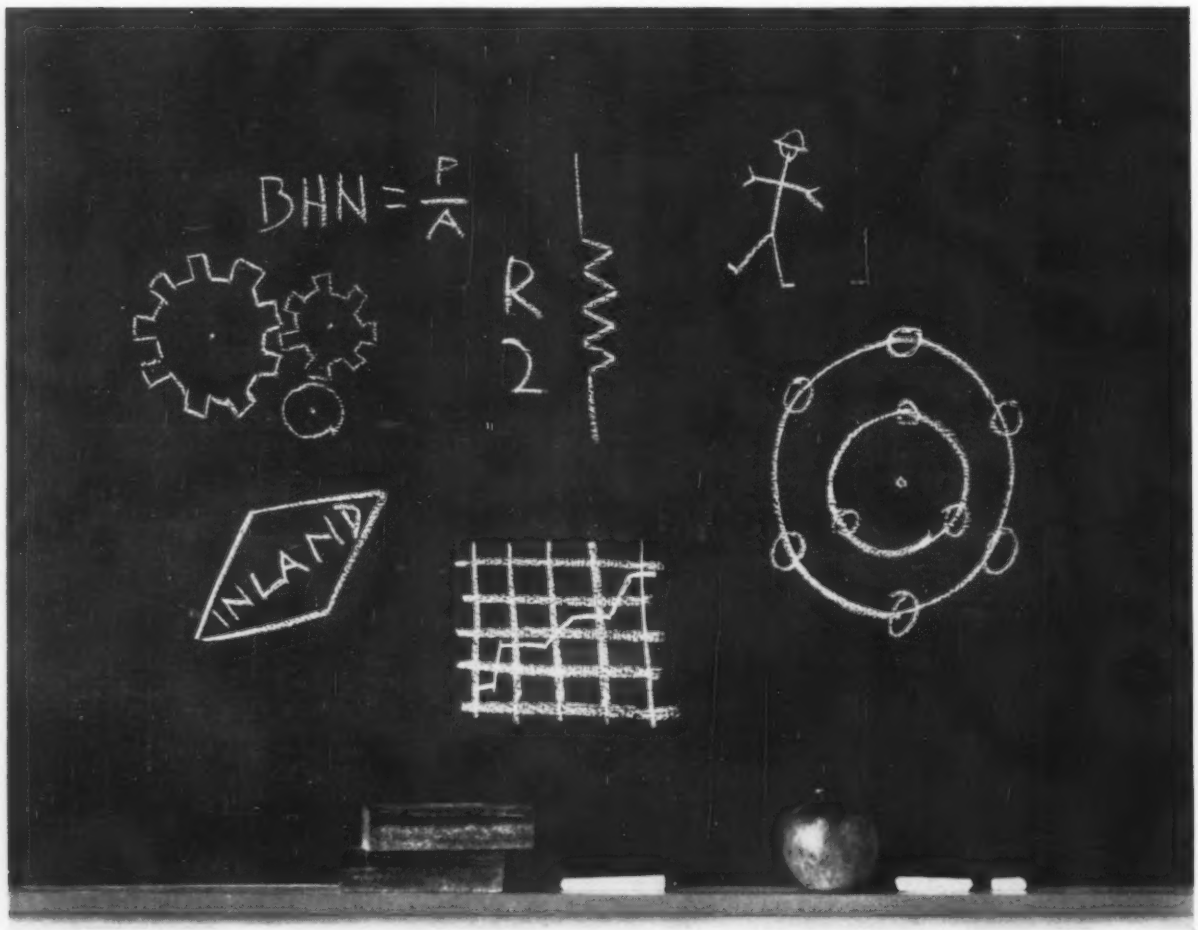
14,089 Inland employees went to school last year

Many went because they were enthusiastic about their jobs—inspired by the advancement opportunities at Inland. Others went because Inland, ever on the watch for men capable of developing their abilities, sought them out—found them—encouraged them to take the next step.

At Inland, this thoughtfully planned system of seeking for such men within the company, has now been in continuous operation for more than fifteen years. Because of it, more than 70% of Inland's supervisory staff have come up from the ranks—30% more from Inland's College Recruitment Program. Because the system encourages personal growth, the process never stops. It may begin with on-the-job training programs in which 3,842 employees participated last year. It can continue through Inland's programs in conjunction with leading educational institutions, such as Harvard, Purdue, University of Chicago and Wabash College.

With literally thousands of Inland men building their own futures, a new kind of climate is created—a climate in which men find real satisfactions in their work and the products of their labor. It results, we believe, in a growth-minded organization—a company dedicated to ever better service and products for every Inland Customer.

Building Today, with an Eye to Tomorrow



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High-Speed Threading

Watch for announcement soon of a pilot model of a high-speed threading, heading and continuous cutoff machine. Developed initially to provide high-speed continuous cutoff of tubing, rod or wire, the machine can be equipped with a roll-forming head. It's expected to outperform screw machines in faster production rates.

Steel Shortage Hits

While it will take at least two weeks before steel shortages become generally noticeable, it's already apparent that one of the first industries to feel the pinch is farm equipment. Some production cuts have already occurred. The reason: Unexpectedly high second quarter sales wiped out reserve stocks among many small producers.

Oxygen Vessels Get Bigger

Basic oxygen vessels planned for a major steel company reportedly will have capacities of 255 tons or better. This will be more than seven times bigger than the first vessel built in this country and more than double the sizes of most recent vessels.

Close Tolerances for Sheet

A new manufacturing method using chemicals gets tolerances of sheet metal down to ± 0.001 in. Announced by United States Chemical Milling Corp., the method, with no similarity to chemical milling, brings sheet stock or parts of any configuration into close over-all tolerance. It can be employed before or after forming, machining or chemical milling.

Electro-Hydraulics in Cars

A central electro-hydraulic system to power automotive accessories is beginning to intrigue automakers. Big advantages seem to be weight and space savings, plus cost and power savings. Engineers say hydraulics are more suited to providing linear movement than individual electric motors. A single system would provide power to operate such components and accessories as brakes, seats, windows, steering, convertible tops, windshield wipers and other devices.

Make Patent Search Pay

Some companies squander large sums in research and development of products already thoroughly blanketed by patents. One diversified company starts all product development with complete patent searches. It uses them in studying smaller companies to acquire and finds they stimulate creative thinking in engineering.

Speak up on Depreciation

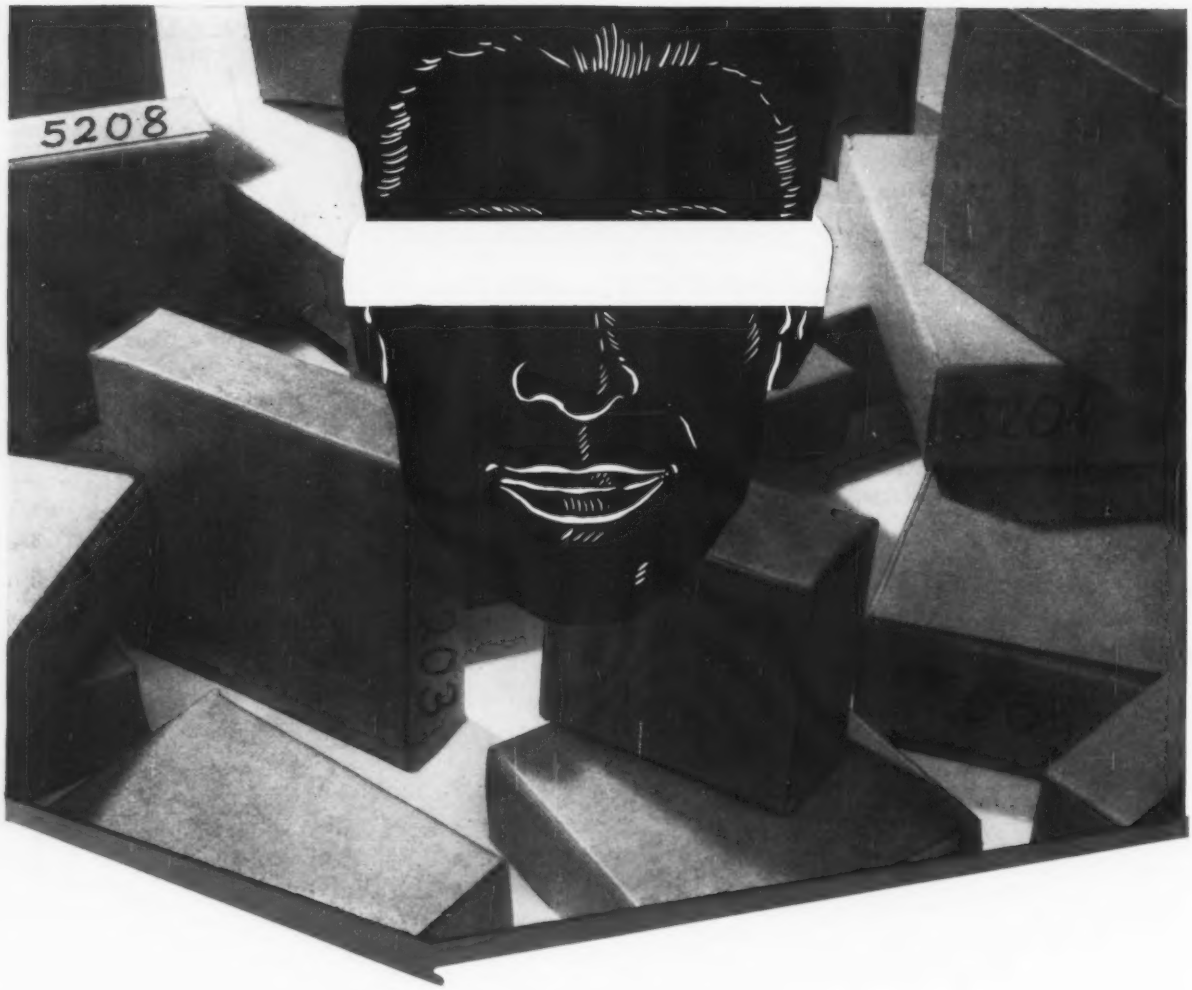
U. S. Treasury's giving closest study to industry's views on depreciation. It's now sampling a cross section of owners of capital goods. What the questionnaires reveal will form base for the administration's view to congressional taxwriters in November concerning the depreciation problem. If your company is among those sampled, don't pull punches. This is industry's big chance to speak up on depreciation.

Liquid Metallic Siding

Combining the durability and insulation of aluminum and the beauty of outside paint, a new liquid metallic siding both waterproofs, and insulates in one coat. It's recommended for cement and cinder-block construction and also metal cribs and tanks where it rustproofs.

Learn from Missile Failures

Contamination of fluids is one of major causes of failures of missile and jet aircraft components with close-tolerance valves and actuators. Very fine filtration systems are being developed to solve these problems. They'll afford a carryover into metalworking, permitting greater precision in machine tools and other equipment using hydraulics.



Don't buy bearings blindfolded . . .

Make certain the bearings you buy are in the manufacturers' original, sealed boxes . . . and avoid surplus or shelf worn bearings. These bearings are usually in plain boxes or individually wrapped and often are without any identification except for the bearing number.

If you are not getting "Factory Fresh" bearings you are not buying bearings incorporating the latest design and those which will give the longest life in your equipment. The one easy, certain way to get the bearings you want is to buy from Bearings, Inc.! We're *authorized* distributors for the many lines of bearings and accessories we sell—guaranteed by the manufacturers and Bearings, Inc. Our bearing engineers can recommend the best bearings for all applications and you will save time, trouble and money. Call the branch nearest you!

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LETTERS FROM READERS

Lost Leadership

Sir—I have just returned from a trip to the West Coast where your editorial of June 18th (Lost Leadership—It Could Happen to Us) was called to my attention. I wish to congratulate you on the very clear and pointed way you have revealed one of the big problems of today.

It is such an excellent article I want all the top management of our member firms to read it.

So with your permission I would like to reprint this editorial in our house organ, The Steel Plate News. —J. Dwight Evans, Executive Director, Steel Plate Fabricators Assn., Chicago, Ill.

Glad you like the editorial. You have our permission to reprint it. —Ed.

Comment on Candor

Sir—The candor exhibited on p. 69 of your July 9 issue is genuinely refreshing. I refer, of course, to the statement in the automotive column: "Power steering and power breaks are becoming increasingly popular."

Let it be hoped that these power breaks do not become overwhelming.—G. S. Schaller, Professor, Mech. Engrg., University of Washington, Seattle.

▪ **That's one of the brakes of this game, Prof.—Ed.**

Casting Control

Sir—In the June 18 issue one of your Newsfronts refers to a method for casting metal. This method is stated to employ a controlled rate of heat transfer from the mold and a calculated amount of feed to produce castings of high integrity. We shall appreciate learning more about it.—J. A. Rassenfoss, Mgr., Mfg. Research Laboratory, American Steel Foundries, Indiana Harbor Works, East Chicago, Ind.

▪ **Get in touch with the Niforge Corporation, 677 Beacon Street, Boston, Mass.—Ed.**

Pat on the Back

Sir—I am writing to tell you how much I value each issue of Iron Age. Your editorials are excellent.

The one in the July 2 issue on the Berlin crisis was especially interesting. We had it reprinted on the President's Page in a recent issue of the Connecticut Purchasor. —B. G. Lowe, President, The Purchasing Agents' Assn. of Connecticut, Inc., Ansonia, Conn.

Maintenance Costs

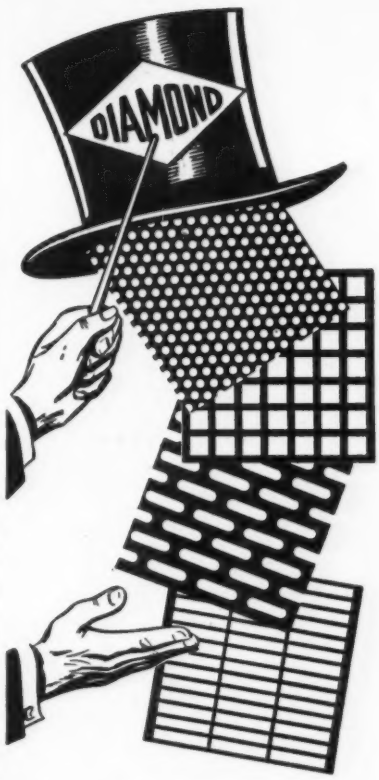
Sir—Please send a copy of the very interesting and thought provoking article on "Cost Cutting Ways to Improve Plant Maintenance Programs" which appeared in your May 21 issue.

The IRON AGE is enjoyed by our Industrial Engineering Department.—C. H. Lamb, Jr., Chief Methods Engr., Ford Motor Co., Sandusky Plant, Sandusky, O.

Responsibility

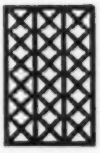
Sir—Thank you for the three copies of "How to Prepare For Greater Business Responsibility" (June 4 issue). For use in our management trainee program could we have ten more?—E. C. Larkin, Director of Personnel, Merritt-Chapman & Scott Corp., New York.

Copies are on the way.—Ed.

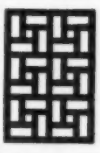


Top-Hat Quality
IN
Perforated Metal

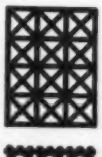
The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.



Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

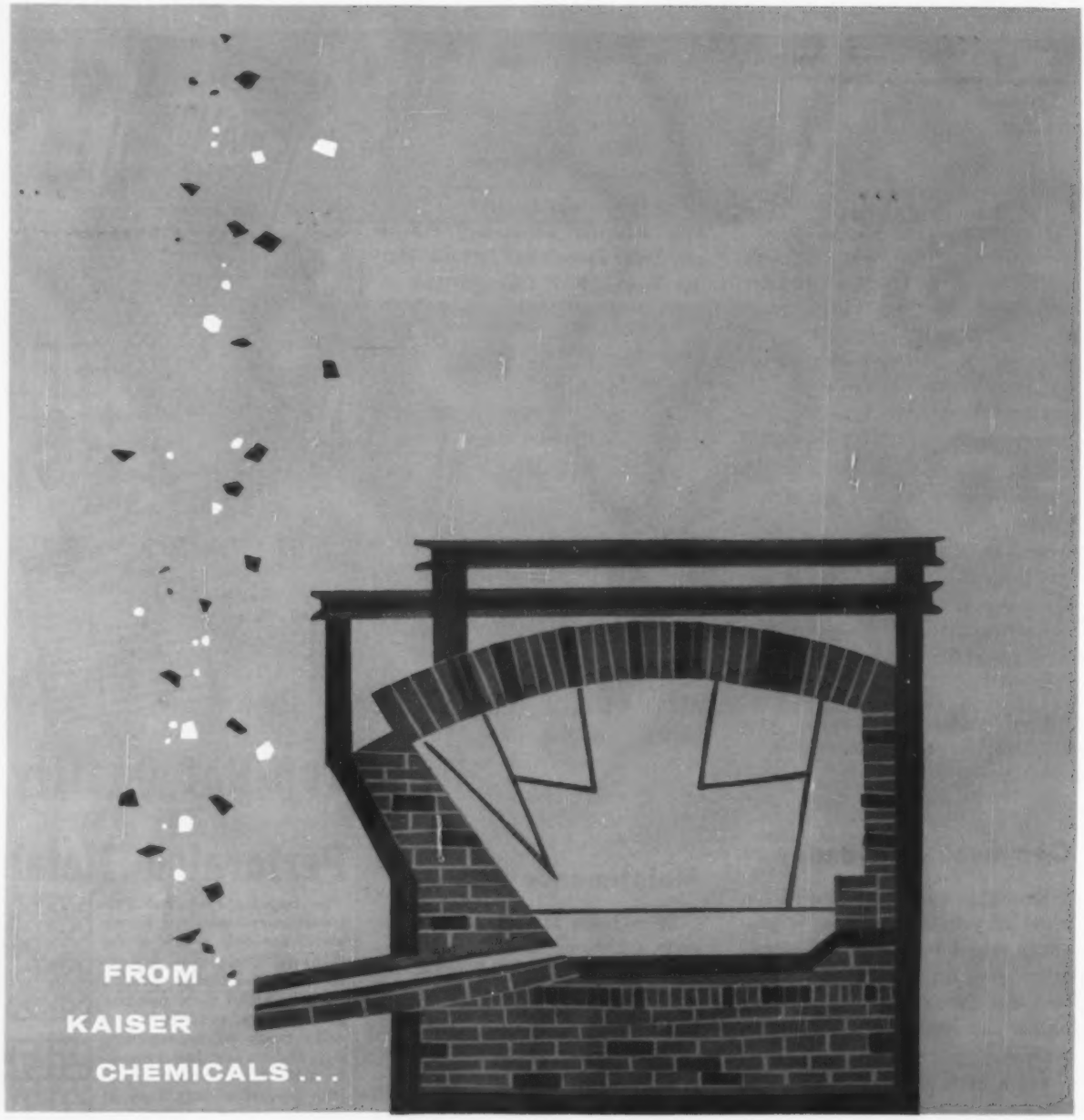


Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



DIAMOND MFG. CO.
WYOMING WILKES-BARRE AREA PA.

Manufacturers of DIAMONTEX, the Perforated Metal Lay-in Panel for better Acoustical Ceilings. New Bulletin No. 47 gives complete illustrated information. Write for free copy.



ALL

basic brick compositions and refractory grain materials required by the steel industry.

Each of these Kaiser Basic Refractories is designed for peak performance in a specific steel industry application. And all are backed by more than 17 years of continuing research and development.

BRICK:

1. Kaiser Periclase "D". Burned. For electric furnace "hot spots," O.H. slag line.

2. Kaiser Periclase "DS". Burned. High MgO (95%+). For basic open hearth and electric furnace sub-hearths.

3. Kaiser Periclase. Burned. Low iron, chrome free. For sub-hearths.

4. Kaiser Periclase Chrome. Unburned-Burned. High spall and slag resistance. For open hearth end walls, front walls and roofs, electric furnace side walls.

5. Kaiser Chrome Periclase. Unburned-Burned. Highest spall resistance. For all exposed O.H. areas.

6. Kaiser Chrome "DC". Burned. High chromite, Periclase bonded. For soaking pits, O.H. front piers at slag line.

7. Kaiser Chrome. Burned. High chromite corrected, neutral. For reheat & forge hearths and soaking pits.

MIXES, MORTARS & GRAINS:

8. Permanente 165 Ramming Mix. High purity. 95-96% MgO, high density, low shrinkage. For new bottoms or slopes.

9. Permanente 84 Ramming Mix. High magnesia. For new bottoms, banks; or hot repairs.

10. Gunning Grains. K/R 95. For hot repairs above slag line. O.H. and electric furnaces.

11. Gunning Grains. K/R 165. For hot repairs below slag line. O.H. and electric furnaces, and hot tapholes.

12. Bonding Mortars. Several types. High purity MgO; Dry Chrome. For all types of bonding.

13. Furnace Grains. A variety of Periclase mixtures, Deadburned Magnesite, Deadburned Dolomite, Chrome Ore.

Call or write Kaiser Chemicals Division, Dept. S9152, Kaiser Aluminum & Chemical Sales, Inc., at any of the Regional Offices listed below.

PITTSBURGH 22, PA. . . . . 3 Gateway Center
HAMMOND, IND. . . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

KAISER REFRACTORIES

Ask to see the 30-minute color movie, "Progress in Modern Basic Refractories." Arrangements will be made by your Kaiser Refractories Sales Representative or Regional Office.

Looked in Your Basement Lately?

What's in the basement of the building where your company is headquartered?

Think you know? Think it's just some old records and ledgers?

Maybe you had better run down and have a good look. That's all that was supposed to be in the basement of the Atlantic Mutual Insurance Co. in downtown New York City.

But when Mrs. Celia Lambert, editor of the company's employee magazine, The Atlantic Log, actually started rummaging, here are some of the things she came up with: **Two chamois bags—one with gold nuggets, and the other containing about a palmful of gold dust; a World War II German Naval officer's dagger, complete with swastika; and a brace of revolvers.**

There is no record, nor has anyone the foggiest notion how, or why, or for that matter when, any of this stuff got there.

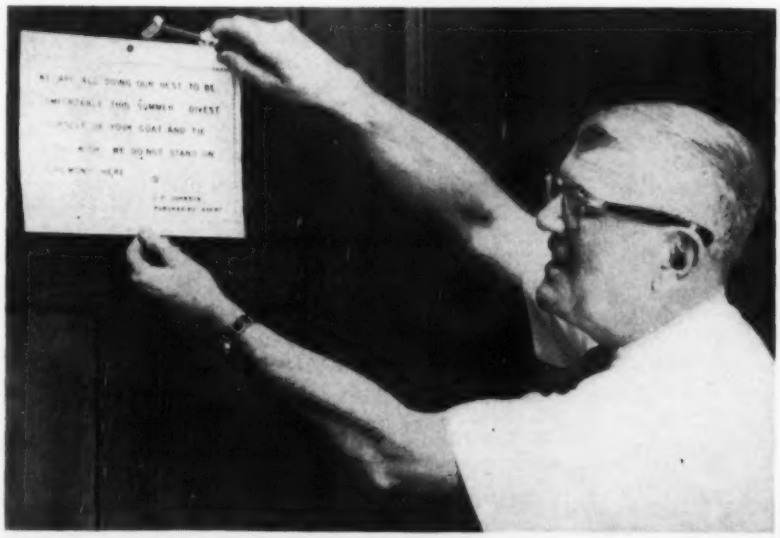
For the Record—The expected records were there, only moreso. A diary of a Captain Warring contains some complete weather information for New York from 1824 to 1835. The Weather Bureau has no other record for this period, is simply delighted to get a microfilm of the diary.

Captain Warring also notes that on April 22, 1831 a pair of pirates was hanged on Ellis Island, the former first-stop for European immigrants.

Look and Tell—Like we were saying, maybe you had better take a run down and have a look. And if you come up with anything interesting let us know.

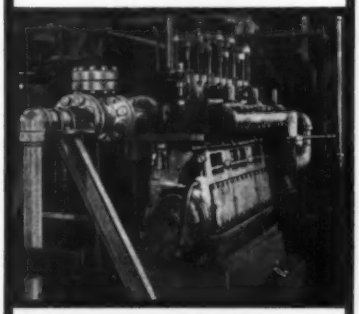
Thanks to the New York Times for the original report of the "Atlantic Mutual Find."

Aid and Comfort for Salesmen

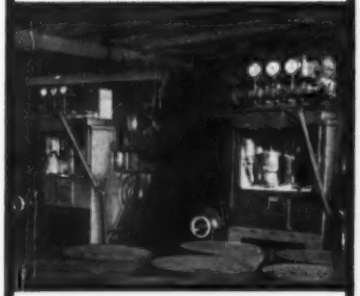


WARM ADVICE: Baird Machine Co., Stratford, Conn., knows how to make visiting salesmen feel at home—even on hot summer days. C. F. Johnson, Baird's purchasing agent, tacks up a sign telling callers that informality prevails, they may take off coats and ties if they prefer.

COMPLETE CENTRAL HYDRAULIC SYSTEMS FOR



die casting



extruding

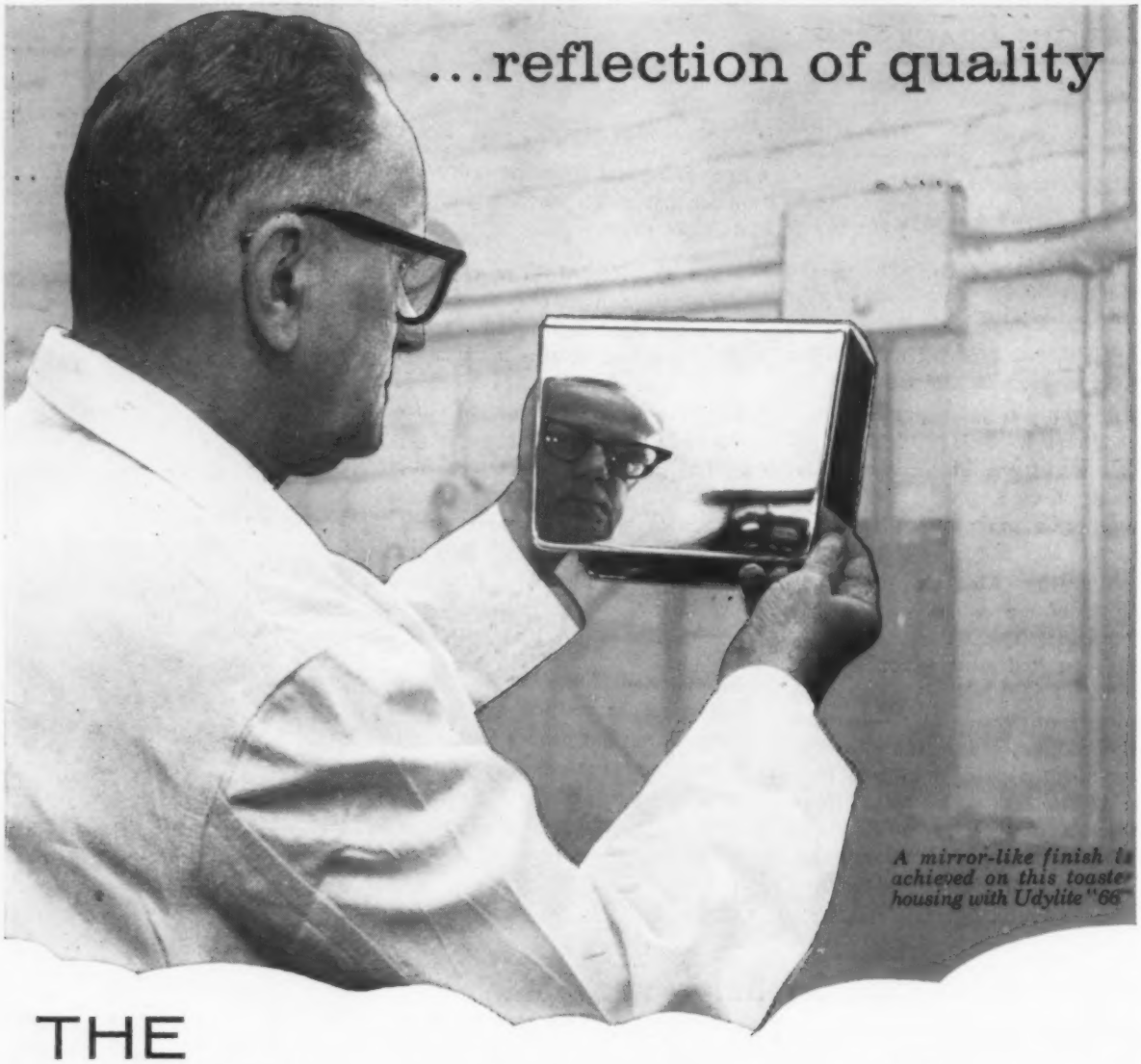
plastics molding

From Aldrich you get all the benefits of unified engineering plus the newest in pumping equipment. Aldrich Direct Flow Pumps to 2500 hp. Aldrich-Groff Controllable Capacity pumps to 125 hp. Pressures to meet your requirements. Write for data.

LOWER PUMPING COSTS WITH

ALDRICH

Aldrich Pump Company
8 Pine Street, Allentown, Penna.



THE INCOMPARABLE "66"

Udylite's Bright Nickel Process "66" is sweeping the country with new installations and conversions to provide a truly incomparable plate with almost unbelievable ease of operation. The color of the process alone, sells "66" in any comparison. . .

The production of your existing equipment can be *greatly increased* with the introduction of Process "66". Its outstanding qualities include exceptional levelling ability and remarkable ductility for so bright a finish.

In addition, Process "66" has overcome the problems previously considered inherent in plating over semi-bright nickel and, it is unusually receptive to chromium. You'll find that the amazing adaptability of this very bright finish makes it suitable for your finest work . . . moreover it will save you money.

A phone call or letter will start Udylite's "66" Bright Nickel process on its way to help you improve your production. If it sounds too good to be true, just send us a sample of your product . . . we will be happy to test-plate it for you with Incomparable "66". Act TODAY!

SUPER "66" For even greater brightness and levelling where absolute maximum ductility is not demanded, Udylite's SUPER "66" may be specified. You must see this finish to believe its brilliance.

the udylite corporation

detroit 11, michigan • world's largest plating supplier

COMING EXHIBITS

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress—Metal mining-industrial minerals convention, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago. Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22. The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel, Chicago. Asso-

(Continued on P. 16)

ROLOCK

FABRICATED HEAT AND CORROSION RESISTANT ALLOYS

why they are calling us

"THE MUFFLE PEOPLE"

In many years, there have been few occasions when Rolock engineers and constructors were not working on muffles . . . of almost every size and type . . . from "little fellows" to real giants.

Today, this background of experience brings us many of the most important jobs in the field, some examples of which are shown above. Among many important design contributions we have made is an entirely new type of Rolock corrugated wall and roof construction that greatly extends muffle life expectancy. To a number of muffle users Rolock's experts are, indeed, the "muffle people."

Building such muffles is a job that requires experienced engineering design as well as exceptional skills and craftsmanship in handling special alloy fabrication. Rolock offers you both these essentials. A constantly growing file of successful case histories shows important long-range savings to the muffle user. Let us quote on your next job . . . whether it's a standard replacement or one presenting problems to be solved.

SPECIAL SERVICE to users of ENDOTHERMIC GAS GENERATORS

Rolock maintains a prompt repair and replacement service for these gas generator retorts. Our New, improved welded-fabricated Inconel retorts out perform original equipment; offer substantial savings.

FAST DELIVERY

We stock heads, pipes, mesh, catalyst and shell material for immediate service on a full range of large and small sizes. Write or wire.

SALES AND SERVICE REPRESENTATIVES FROM COAST TO COAST

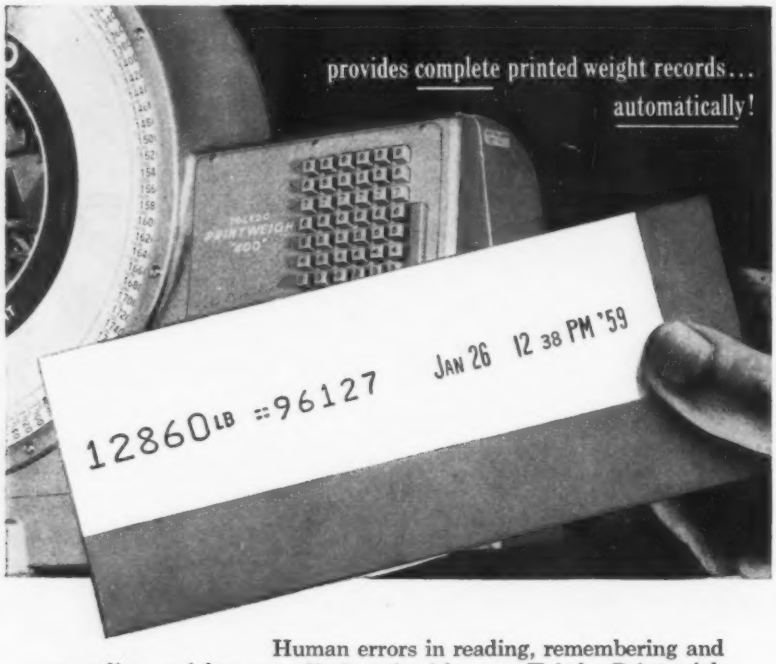
ROLOCK INC., 1362 KINGS HIGHWAY, FAIRFIELD, CONN.

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

2RL59

BAN this "birthplace of losses"
... hand-written weight records!

NEW TOLEDO PRINTWEIGH® "400"



Human errors in reading, remembering and recording weights *are eliminated* with new Toledo Printweigh "400" . . . product of Toledo's advanced research and development programs to improve weighing efficiency.

Printweigh "400" provides *complete* printed weight records on materials received, processed, transferred or shipped. It's applicable to the full range of Toledo dial scales . . . offers a wide choice of optional features, including a "memory" for printing weight data even after the load is removed.

Printweigh "400" prints full figures, even when using unit weights . . . prints where you wish on 8½" x 11" forms, or on tickets or strips . . . and for positive weight identification, offers 6 to 12 bank selective numbering, or up to 10 weight identifying symbols. Automatic five digit consecutive numbering is also available.

REMOTE RECORDING, TOO!
Printweigh "400" can give wings to weight data by transmitting it to remotely located adding or other office machines. Brings new flexibility and accuracy to weighing operations.

SEND FOR Printweigh "400" bulletin 1157. Or, ask your Toledo representative. TOLEDO SCALE, Division of Toledo Scale Corporation, 1431 Telegraph Rd., Toledo 12, Ohio.

SERVICE Factory-Trained 240 Cities

TOLEDO®
greatest name in weighing

EXHIBITS, MEETINGS

(Continued from P. 15)

ciation headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society — National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

National Assn. of Sheet Metal Distributors — Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

Truck Body & Equipment Assn., Inc. — Annual convention and exhibit, Oct. 5-7, Sherman Hotel, Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago, Association headquarters, 420 Lexington Ave., New York.

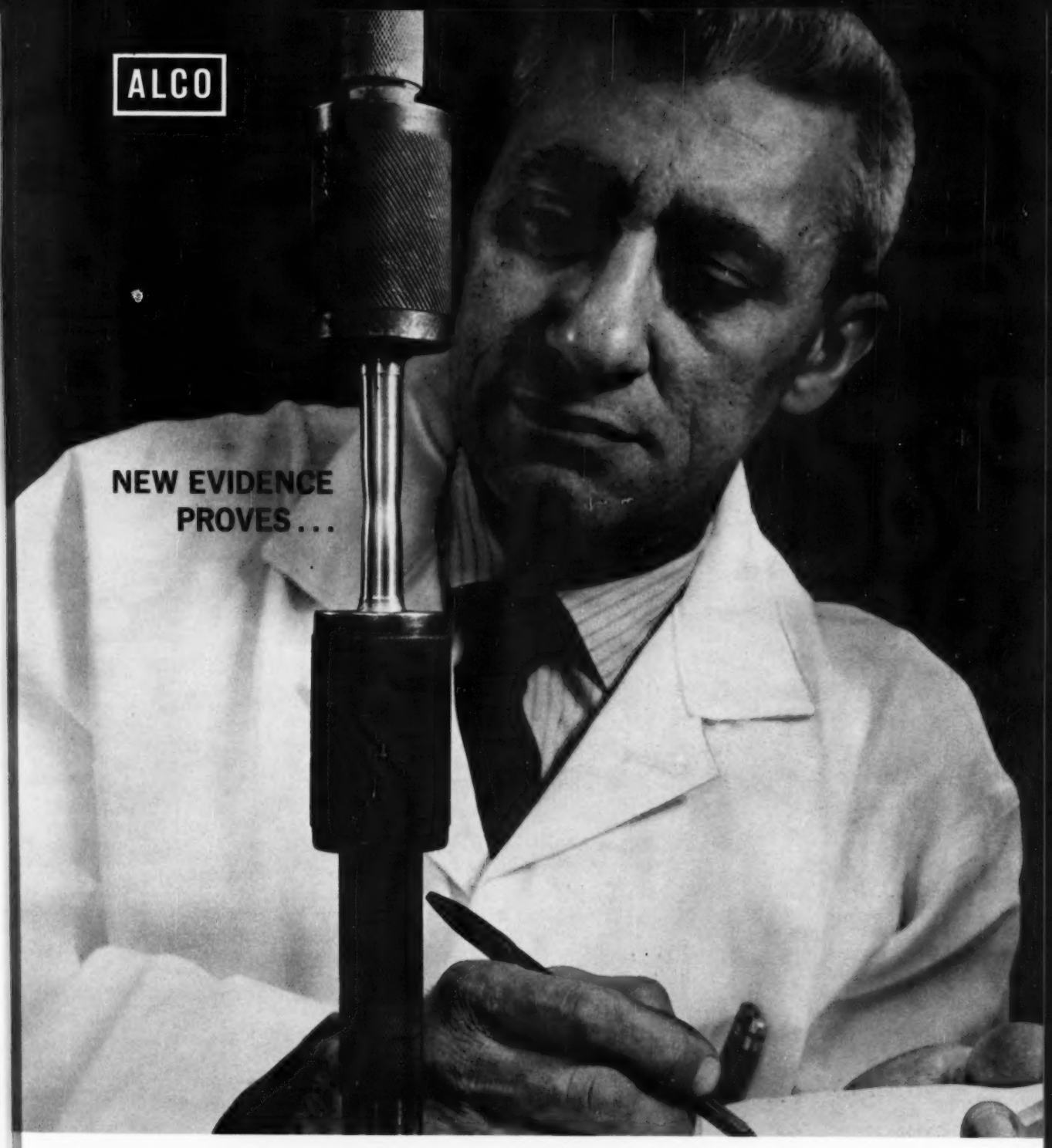
Society of Automotive Engineers—National Aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc.—Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

Conveyor Equipment Manufacturers Assn. — Annual meeting, Oct. 10-13, Grand Hotel, Point Clear, Ala. Association headquarters, One Thomas Circle, Washington, D. C.

American Society for Testing Materials—Pacific area national meeting, Oct. 11-16, Sheraton-Palace Hotel, San Francisco, Calif. Society headquarters, 1916 Race St., Philadelphia.

Wire Assn. — Annual convention, Oct. 12-15, Statler Hotel, Cleveland. Association headquarters, 453 Main St., Stamford, Conn.



ALCO's Hi-Qua-Led Steel Forgings can raise your profit... without lowering your standards

CONCLUSIVE EVIDENCE:

NO CHANGE IN PROPERTIES
with the addition of lead in ALCO's

For the first time, here is published evidence establishing the superiority of one forging steel over all others. The evidence comes from actual production Hi-Qua-Led Steel forgings, tested by ALCO Products, Inc. and confirmed by a variety of customers after extensive value analysis.

The results as reported on these pages prove there are *no significant differences* between the physical properties of ALCO Hi-Qua-Led Steel forgings and unleaded forgings of the same grade. Couple this fact with Hi-Qua-Led's outstanding *machinability* advantages and you have the reasons why ALCO's unique leaded steel is the number one choice for forgings.

The tensile-test data compare physical properties of three steels: AISI 1045, 4140 and 4340, to the same grades (10L45, 41L40 and 43L40) with the ALCO lead addition. They prove that when lead is added by ALCO's special patented process there is no measurable effect upon yield and tensile strengths, and ductility.

Cost-cutting Hi-Qua-Led Steel forgings are available *only* from ALCO, in any steel grade. No other forgings can offer the benefits of Hi-Qua-Led: an increase in your manufacturing profits due to the superior machinability—along with maintenance of your product-quality standards because there is no loss in mechanical properties.

GRADES OF STEEL TESTED
1045 (216 Bhn) **vs.** **10L45*** (225 Bhn)
4140 (260 Bhn) **vs.** **41L40** (270 Bhn)
4340 (285 Bhn) **vs.** **43L40** (292 Bhn)

OTHER TEST RESULTS

FATIGUE STRENGTH—To 340 Brinell, there is no difference in fatigue strength between Hi-Qua-Led Steel forgings and regular forgings of the same grade. Above 340 Brinell, in smooth bar properties, there is a gradual drop-off in Hi-Qua-Led forgings to about 10 per cent at 400 Brinell. In notch-bar properties, there is no difference.

SURFACE FATIGUE—In the AISI 1000 series steels, Hi-Qua-Led Steel forgings have 30 per cent higher resistance to surface fatigue than their non-leaded counterparts. In the 4100 steels, Hi-Qua-Led has a 15 per cent advantage. In the 4300 series, there is no significant difference.

HARDENABILITY—Customers report "no observable difference" and "more uniform hardening and structure" with Hi-Qua-Led Steel forgings.

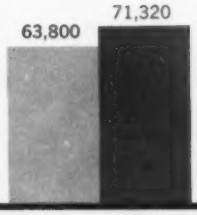
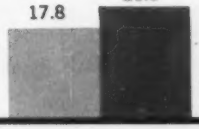
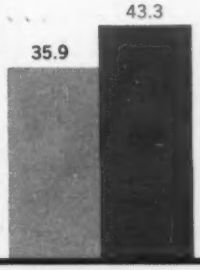
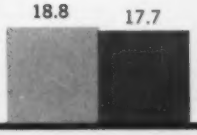
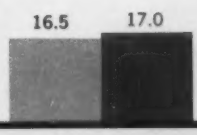
WELDABILITY—There is no difference in the welding of Hi-Qua-Led Steel forgings and regular forgings of the same grade. Hi-Qua-Led is approved for ASME Code welding *(Special Case Ruling No. 1253)*.

CHARPY IMPACT—For 1045 and 4140 series steels, Hi-Qua-Led Steel forgings exhibit better properties than their unleaded counterparts. In 4340, there is no difference between Hi-Qua-Led and regular forgings.

ALCO

EXCEPT BETTER MACHINABILITY

special process Hi-Qua-Led Steel®

TENSILE STRENGTH (psi)	YIELD STRENGTH (psi)	DUCTILITY		RESULTS
		PER CENT ELONGATION	PER CENT RED. OF AREA	
				There is no significant difference between 1045 and 10L45.
				There is no significant difference between 4140 and 41L40.
				There is no significant difference between 4340 and 43L40.

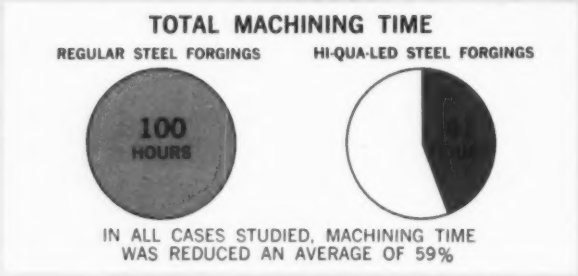
***The "L" designator in any AISI number denotes Hi-Qua-Led Steel. For example, AISI 1045 becomes 10L45 in Hi-Qua-Led Steel.**

For a report on Hi-Qua-Led Steel machinability, turn page . . .

HI-QUA-LED STEEL GIVES YOU MACHINING ADVANTAGES UNMATCHED BY ANY OTHER FREE-MACHINING STEEL

HI-QUA-LED STEEL REDUCES MACHINE TIME MORE THAN 50 PER CENT

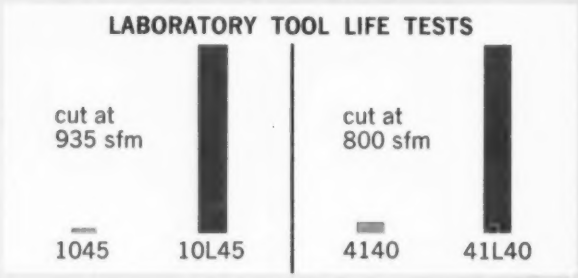
The submicroscopic addition of lead to Hi-Qua-Led Steel changes two basic machining factors. First, the shear angle is increased, reducing the heat generated and the force required for plastic flow. Second, frictional properties of the chip flowing over the tool are reduced, generating less heat and causing less chip welding, and further reducing the force requirement. These changes permit much higher speeds and feeds. Translated into machine time, in most cases they mean more than a 50 per cent saving, floor to floor.



IN ALL CASES STUDIED, MACHINING TIME WAS REDUCED AN AVERAGE OF 59%

HI-QUA-LED STEEL INCREASES TOOL LIFE UP TO 100 TIMES

In laboratory tests by a major tool maker, cutting at 935 sfm, a tool lasted one minute on standard 1045 and 100 minutes on Hi-Qua-Led 10L45 from the same heat. On standard 4140, at 800 sfm, a tool lasted one minute. On Hi-Qua-Led 41L40 from the same heat, at the same surface speed, the tool lasted 18 minutes. Of course, you probably won't cut Hi-Qua-Led at these speeds (although you can). But even at more normal speeds, customers report tool life increases of 200%, 700%, even 1600%.



HI-QUA-LED STEEL FORGINGS ARE MADE ONLY BY ALCO

There are many leaded steels on the market, but there is only one Hi-Qua-Led Steel. It is available only from ALCO, and only in forgings.

You can get Hi-Qua-Led Steel forgings in any steel grade. Each heat of ALCO steel is carefully made in 60-ton open hearths, assuring strict control of steel chemistry to specification.

For complete information on Hi-Qua-Led Steel's machinability and physical characteristics contact the nearest ALCO sales office, or send for the free 40-page reference booklet: "Technical Data, Hi-Qua-Led Steel Forgings." Write to ALCO Products, Inc., Dept. 159, Schenectady 5, N. Y.

SIZES AVAILABLE

Open die forgings—rectangular
Maximum width—48 in.
Maximum height—32 in.
Maximum length—40 ft
Maximum weight—36,000 lb
Minimum weight—1,000 lb

Open die forgings—shafts
Maximum OD—36 in.
Maximum length—40 ft
Maximum weight—36,000 lb
Minimum weight—1,000 lb

Mandrelled ring forgings
Maximum OD—82 in.
Minimum OD—24 in.
Maximum width—60 in.

Rolled ring forgings
Maximum OD—160 in.
Minimum OD—18 in.
Maximum width—24 in.

See ALCO's *catalog in Sweet's Product Design Catalog File. See Thomas' Register for complete product listings and addresses.*

ALCO

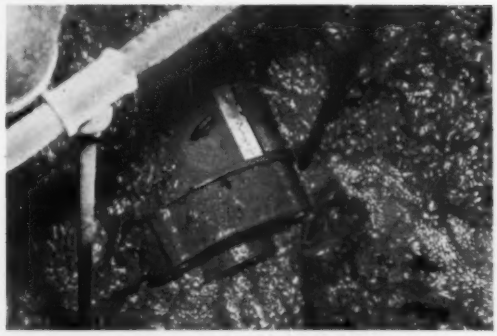
ALCO PRODUCTS, INC.
NEW YORK
SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES • DIESEL ENGINES • NUCLEAR REACTORS • SPRINGS • FORGINGS • WELDMENTS • OIL FIELD EQUIPMENT

PICKLED in a 4% brine solution!

CHOKED
in a tornado of abrasive dust!

FROZEN
for weeks at 75° C below zero!



BURIED ALIVE
in thick, sluggish mud!

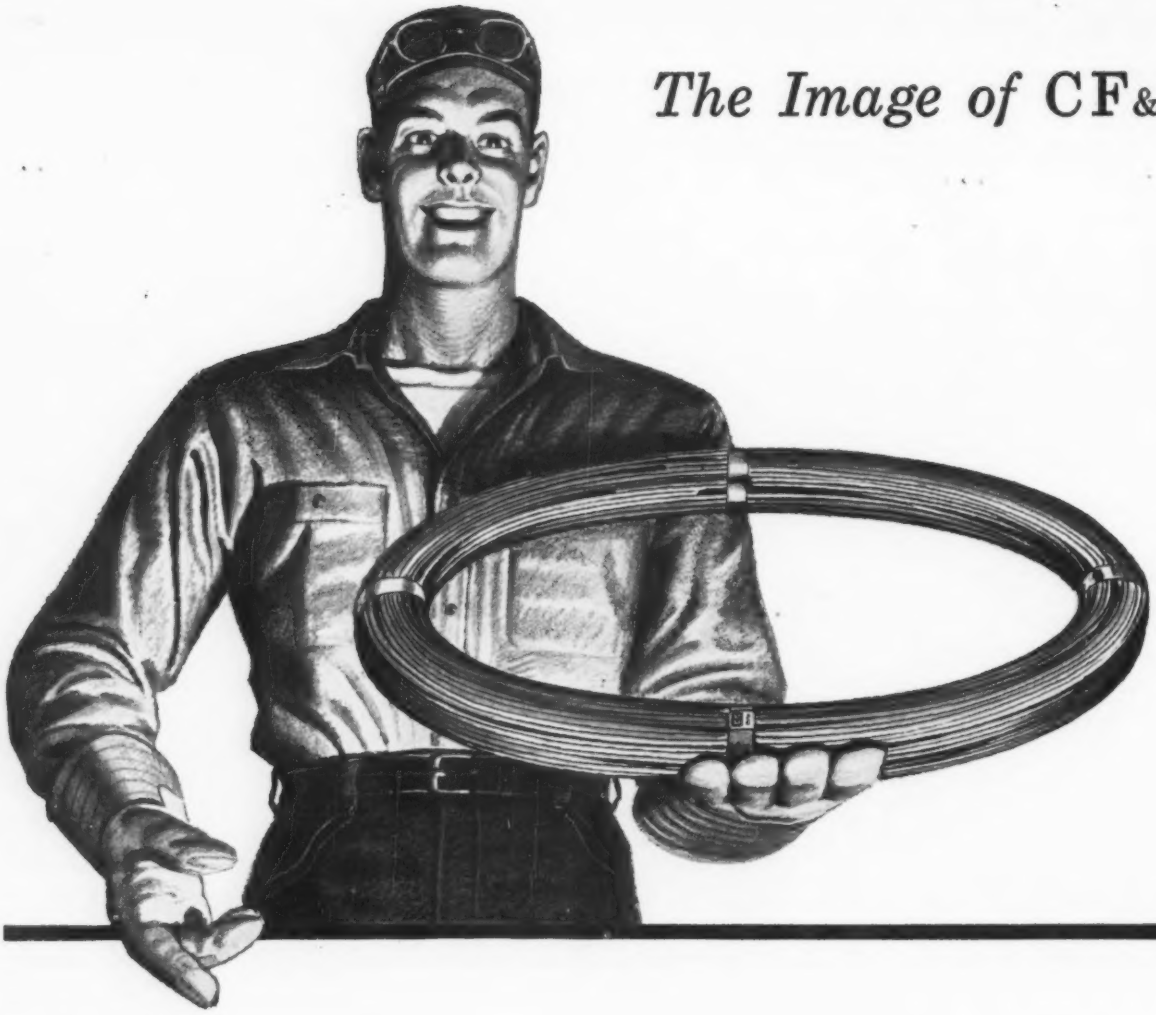
nothing . . . but nothing stops Super-Seal open-type motors

Thanks to exclusive Poxeal and Silco-Flex insulations, Super-Seal motors have shown endurances that even enclosed motors couldn't match. Results and reasons available from your A-C representative or distributor. Or write General Products Division, Milwaukee 1, Wisconsin

Poxeal, Silco-Flex and Super-Seal are Allis-Chalmers trademarks.

ALLIS-CHALMERS A-1151

The Image of CF&I



THE CF&I GIANT stands for "steelmanship"—the science of developing new and improved steel products for all industries. An example of how CF&I's continual research benefits *wire users* is our new Black Satin finish on Round and Square Oil Tempered Wire.

Available only from CF&I, Black Satin is a fine, powdery finish that works as a lubricant during coiling and crimping operations. This unique finish is the result of tempering the wire under electronically controlled atmospheric conditions.

Uniformity of Black Satin Oil Tempered Wire Cuts Production Costs

This special finish is uniform throughout the length of each coil . . . from coil to coil . . . from lot to lot. Black Satin's powdery finish prevents surface scale "flake off"—a problem with ordinary Oil Tempered finishes that require constant readjustment of your initial setup. Your benefits: less downtime, less scrap loss, uniform end products.

Black Satin Finish Increases Output

To lengthen your production runs, CF&I can supply you with this top quality Oil Tempered Wire in continuous unwelded lengths up to 600 lbs. These large coils minimize the extra rethreading time required by smaller coils.

This outstanding Oil Tempered Wire is available in a full range of gages and sizes, in steel-strapped or wire-tied coils from 16″ to 72″ in diameter. Straightened and cut lengths from 6″ to 24′ (or longer) can also be supplied.

Identification Tags Assure Uniform Wire Grades

To assure the same steadfast quality from coil to coil, CF&I color tags every coil for a reliable record of its processing, testing and intended use. By merely returning the tags when you reorder, you automatically receive the same uniform quality on all subsequent orders for the same grade of wire.

offers . . .

BLACK SATIN

a unique Oil Tempered wire finish to cut your production costs

These tags show:

Heat Number_____

Size_____

Tensile Strength_____

Date_____

Coil Number_____

Test Sheet Number_____

This color tag system also facilitates your job of inventory control, in-plant storage, and materials handling.

Besides Oil Tempered Wire, CF&I supplies all types of quality steel wire—and you can specify your wire *packaged for your production.* These different packages offer you various operating advantages from less machine downtime to easier unloading, storage, inventory control and continued cleanliness of the wire.

Because of CF&I's wide diversity of wire types and wire packages, it would pay you to make CF&I your source of supply. Our experienced representative will be glad to discuss your requirements with you. Call him today.

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

CF&I STEEL

6770

In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita

In the East: **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

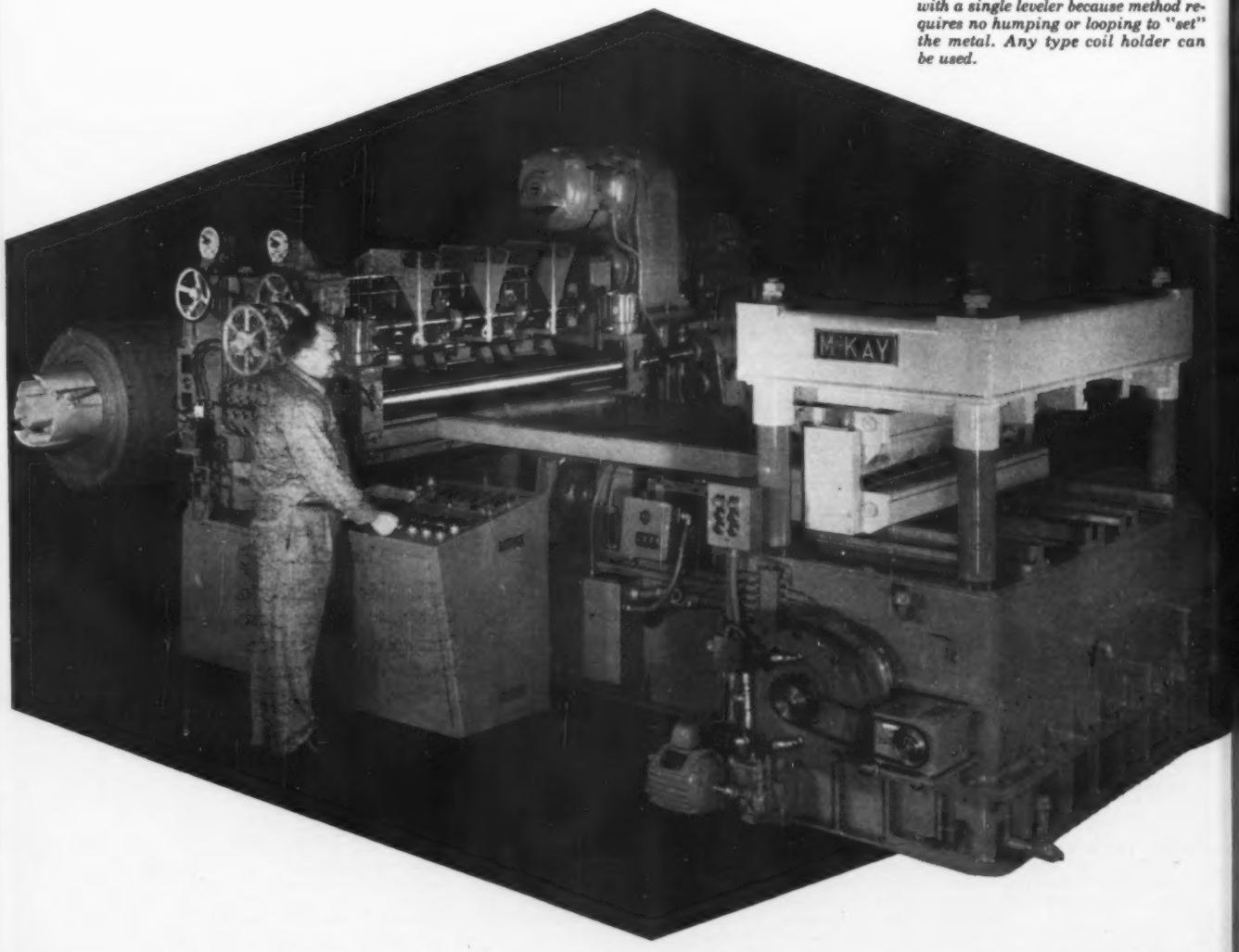
CF&I OFFICE IN CANADA: Montreal • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

AUTOMATIC, INSTANTANEOUS *because of highly accurate electronic counting and measuring mechanisms. Operator simply sets length and quantity by push buttons, shear does the rest. Punched tape or coded card control available.*

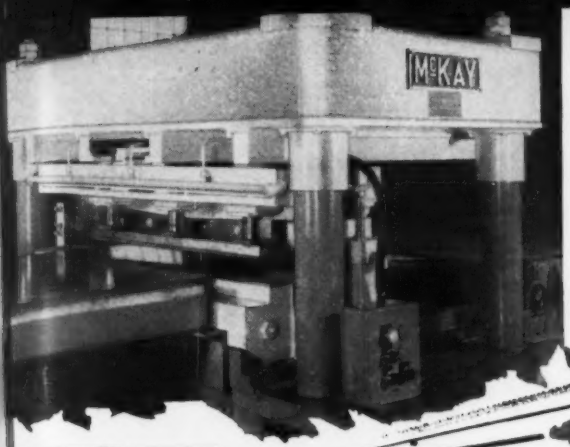
LOW MAINTENANCE *because all drives and controls are simplified AC type, electronic controls are proven standards, cutting dies are standard double-rake shear knives.*

Break

COMMERCIALLY FLAT SHEET *is possible with a single leveler because method requires no humping or looping to "set" the metal. Any type coil holder can be used.*



COMPACT . . . *never before has such a high production unit required so litt area. Space saving, it's ideal for warehouse operations.*



through...

in AUTOMATIC SHEARING

Revolutionary McKaymatic* high production Die Shear line instantly responds to length and Quantity Command

Now—a high production cut-to-length line that meets *all* the requirements of modern day coil shearing. It's the revolutionary new McKaymatic* Die Shear Line and it's fast, extremely accurate, instantly adjusted, compact and relatively low in cost!

The McKaymatic* is applicable for use wherever sheet metal is used. Ferrous and non-ferrous mills, fabricators or warehouses should see this amazing new line before they decide on the purchase of new coil shearing equipment.

UNMATCHED FLEXIBILITY offered by a simplified electronic control makes the changing of length of cut instantaneous. When length and quantity commands are changed (manually or automatically) the line reacts instantaneously without slowing down or stopping. EXACTING ACCURACY, also a product of electronics, is equal to or better than any other available equipment. HIGH PRODUCTION, regardless of the number of length changes is possible because there is no downtime for length changing, etc. LOW MAINTENANCE is possible because the line is designed around simple AC drives and controls, and proven electronic components.

There's nothing like it—for large orders or small—in any width or thickness. Here for the first time is practical push button shearing, and it's easily adapted for standard coded card or punched tape systems. For details write today. *The McKay Machine Company, Youngstown 1, Ohio.* *TM

McKAY MCK MACHINE

Steel Garage Door Made of Republic Electro Paintlok is Backed by Exclusive 5-Year Warranty!

"Berry Doors are guaranteed free of defects in material and workmanship. This warranty covers all parts and components for five full years after original installation."

This is the actual warranty offered by Berry Door Corporation, Birmingham, Michigan — a guarantee that is *exclusive* in the steel garage door industry.

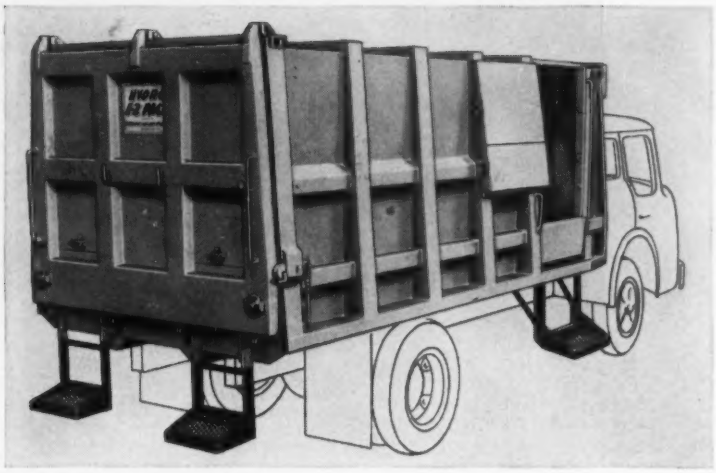
How can the Berry Door Corporation back up its products so unequivocally? One reason is the fact that they are fabricated from Republic Electro Paintlok Steel Sheets!

Electro Paintlok Sheets are strong and rigid—only steel itself provides the *strength* of steel. A pure, uniform coating of zinc, applied by electro-galvanizing, provides extra resistance to corrosion, even if the surface of a Berry Door should be scratched or abraded.

After the zinc is applied, Republic Electro Paintlok Sheets are treated chemically, giving them an inert, finely crystalline, non-metallic phosphate coating which is integral with the zinc, and absorbent in character. When a good grade of paint is applied, this coating grips the paint with thousands of tiny teeth that never let go—provides greater durability and beauty for steel doors or other products fabricated of Republic Electro Paintlok.

In addition to these customer benefits (which make products more salable), Electro Paintlok provides a number of important advantages for the manufacturer. It may be stored for extended periods, under approved warehousing conditions, without loss caused by rusting. It increases die life, and permits faster fabrication, with correspondingly lower production costs.

For additional details on Republic Electro Paintlok Steel Sheets, and the advantages they can bring to your particular application, contact your Republic representative now. Or mail the convenient coupon at far right.



REPUBLIC HIGH STRENGTH STEEL SOLVES WEIGHT PROBLEMS in *Hydro E-Z Pack* enclosed truck bodies, manufactured by Hercules Galion Products, Inc., Galion, Ohio, for haulers of refuse and garbage. Weight savings made possible by strong, tough, Republic "50" High Strength Steel allow *E-Z Pack* unit to be carried on a chassis as small as that of a two-ton truck. Reduced weight also permits increased payload—fewer trips to the dump. At the same time, High Strength Steel stands up easily under heavy compressive force of packer blade and allows tight compaction of loaded materials. High resistance to the corrosive action of refuse, as well as to the abrasive effects of cans, crates, tree limbs, and other materials, assures long, dependable service. Find out how Republic High Strength Steels can pay off in your application. Mail coupon for further information.

SECURE HOLDING POWER where it's needed most is provided by Republic Nylok® Fasteners, used by Roberton Manufacturing Company, Chicago, Illinois, in Twin Power Riding Mowers. Special nylon insert assures positive locking, maximum holding power — even under severe vibration. Insert in Republic Nylok Fasteners is unaffected by age or cold, has high resistance to heat. For further information, mail coupon.

STRONG, DUCTILE YET TOUGH REPUBLIC STEEL WIRE is available in almost any gage and physical range for almost any wire product use you can think of. The concrete reinforcing specialties above are good examples of "imagineering" in wire. Uniform quality of Republic Wire makes easy, exact forming possible no matter how difficult the design. Whatever your wire problem, Republic Wire Metallurgists will help you. Mail coupon.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA-8136
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send additional information on the following:

☐ Electro Paintlok ☐ High Strength Steels
☐ Manufacturers' Wire ☐ Nylok Fasteners
☐ Have a Wire Metallurgist call

Name _____ Title _____

Company _____

Address _____

City _____ Zone ___ State _____

250,000 Power Tools per year with Cities Service Pacemaker T

Porter-Cable, one of the world's largest manufacturers of portable wood-working tools, has long known the value of quality in a lubricant as well as in a power tool. Each piece of equipment made by Porter-Cable is carefully pretested before manufacture and then continually tested for years after its original appearance on the market. It is this kind of thoroughness that led to Porter-Cable's choice of Cities Service Pacemaker 300 T as the hydraulic oil to power their Fostermatic Screw Machines and Landis Grinders.

But Cities Service Pacemaker T is more than a hydraulic oil . . . it is a multi-purpose line of lubricants suited for many applications. Porter-Cable also uses Pacemaker 300 T for lubricating valves in the plant's compressors. Pacemaker T can be used to lubricate bearings, diesel engines, electric motors, generators, reduction gear drives, turbines and in circulating systems.

Pacemaker T is available in various viscosities to give you one line of quality lubricants that can save costly warehouse space by simplifying your inventory . . . cut maintenance costs and extend equipment life. These oils have high viscosity index, excellent heat resistant properties and are chemically fortified against oxidation, corrosion, rust formation and foaming.

Contact your nearest Cities Service office and an experienced Lubrication Engineer will call to make specific recommendations for your plant on the use of Pacemaker T. Or for further information, write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Porter-Cable Machine Company
Syracuse, New York

Porter-Cable Research Engineer testing engine for new lawnmower the company will produce soon. All new products undergo extensive research and testing before production.

Backbone of Production Line is Automatic Screw Machine. Pacemaker T gives outstanding performance as hydraulic medium in these machines as well as in Landis grinders and as a general lubricant!

BARBER COLMAN

Founded in 1900 for the purpose of building textile machinery, Barber-Colman Company today produces diversified equipment and products for such fields as automotive, aviation, machine tool construction and textile.

Versatile ACIPCO

centrifugally spun TUBES

...for super speed warpers

Barber-Colman Company, Rockford, Illinois, manufactures more than 85% of the section beam warpers produced in the world. And Barber-Colman specifies ACIPCO Centrifugally Spun Cast Iron Tubes as supplied through our mid-west distributor, C. A. ROBERTS CO.

The Super Speed Warpers produced by Barber-Colman have a winding speed of 900 yards per minute yet these units are also engineered for low and uniform tension to produce a beam in which thread ends are stressed alike.

Specifications for the machines are strict: tubular metal parts must be machined to a fine finish and to precise measurements. They must have high strength and be balanced so that they are capable of withstanding sustained high speeds. ACIPCO tubes **custom-fit** requirements such as these.

Centrifugally Spun ACIPCO tubes have a dense, non-directional grain structure which is easier to machine. Important, too, their **inherent** dimensional stability and concentricity makes dynamic balance easier to attain in finished products.

If your machines or products employ tubes of stainless steel, carbon steels, alloy irons, or special analyses as components, it will pay you to investigate ACIPCO. Call or write for complete information on ACIPCO tube applications in your field. No obligation, of course.

SIZE RANGE: Lengths up to 410″ have been produced to meet modern machinery requirements. OD's from 2.25″ to 50″; wall thicknesses from .25″ to 4″.

ANALYSES: All alloy grades in steel and cast iron, including heat and corrosion resistant stainless steel, plain carbon steel and special analyses.

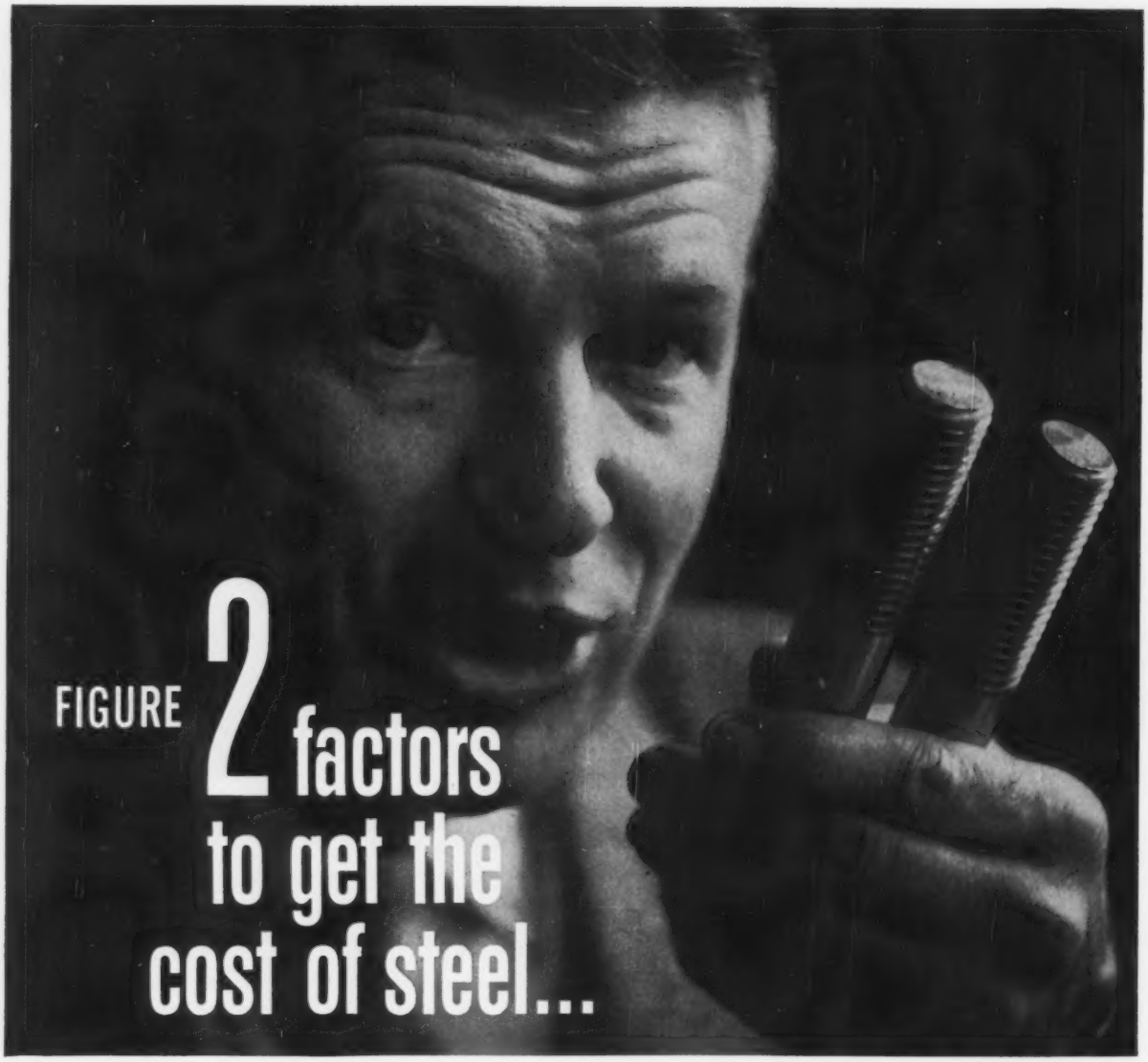
FINISHED: As cast, rough machined, or finished machined, including honing. Complete welding and machine shop facilities for fabrication.

SPECIAL PRODUCTS DIVISION

AMERICAN CAST IRON PIPE CO.

BIRMINGHAM 2, ALABAMA

ACIPCO



COST OF POSSESSION and delivered cost!

The high cost of possession may surprise you. It has surprised many a smart, informed steel user.

When your Steel Service Center performs first cutting operations you save operating and capital costs of the equipment it requires. You get steel delivered quickly from stock, ready for use. You save costs of storage and handling. You cut scrap loss and wastage.

There's a nearby Steel Service Center set up to serve you, not only with steel, but with technical know-how.

If you are buying more than three months' inventory because you think it's a bargain, compare *all* of your costs with the cost and *freedom from risk* of buying from your Steel Service Center. For more information, get the booklet, *What's Your Real Cost of Possession for Steel?* from your Steel Service Center. Or write to American Steel Warehouse Association, Inc., 540-D Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	_____
Cost of capital:	
Inventory	_____
Space	_____
Equipment	_____
Cost of operation:	
Space	_____
Materials handling	_____
Cutting & burning	_____
Scrap & wastage	_____
Other costs:	
Obsolescence	_____
Insurance	_____
Taxes	_____
Accounting	_____
TOTAL	_____

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered

TOTAL _____

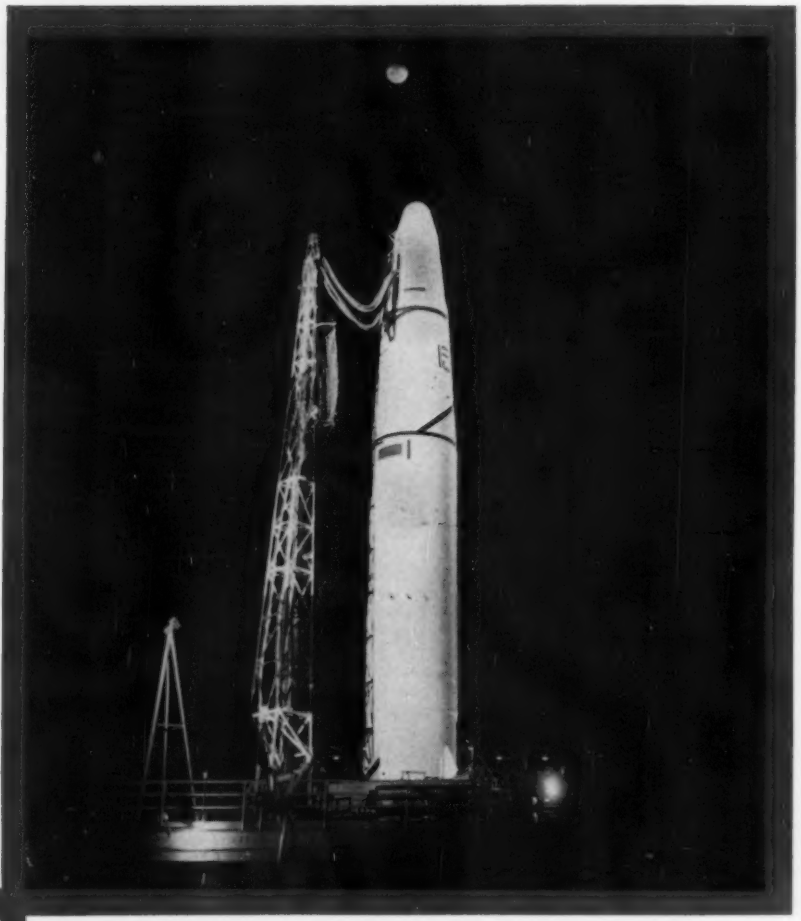
AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

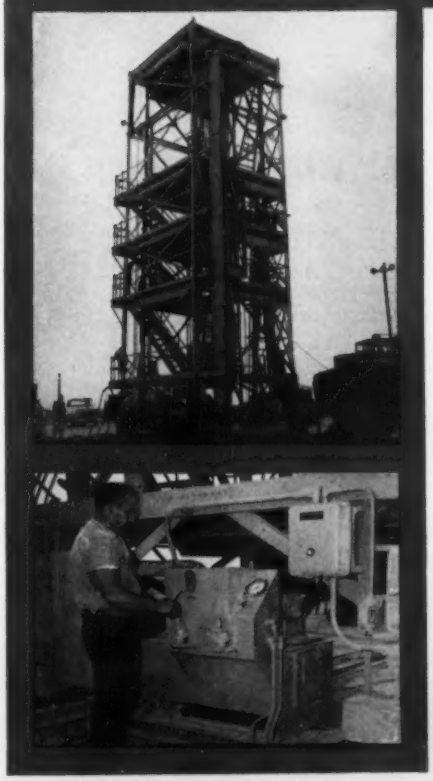
...YOUR STEEL SERVICE CENTER

HOUGHTON
THE ONLY COMPLETE LINE OF
PACKINGS & FLUIDS
FOR ANY INDUSTRIAL HYDRAULIC SYSTEM

making missile launching safer...



Work stand for Polaris Missile.



Close-up of hydraulic reservoir.

houghto-safe fluid protects hydraulic positioning

Missiles are positioned on their launching pads by hydraulic power. These huge messengers, soon intended to reach other planets, must have a hydraulic system which can't go wrong, and with a fluid medium that is *safe*.

Missile makers know Houghto-Safe fire-resistant fluid is both safe and sure. Their choice is also industry's preference. If your plant uses hydraulics—water glycol or ester type—near flame or high heat, there's a Houghto-Safe to protect your workers and your plant property. For complete data, write for the Missile Bulletin No. 2-308.
E. F. Houghton & Co., 303 West Lehigh Avenue, Philadelphia 33, Pennsylvania.

HOUGHTO-SAFE HYDRAULIC FLUIDS

...products of

E. F. HOUGHTON & CO.

Ready to give you on-the-job service

Philadelphia, Pa. • Chicago, Ill. • Carrollton, Ga. Detroit, Mich. • San Francisco, Calif. • Toronto, Canada

SOLVING PROBLEMS COMES EASY

WITH SAGINAW b/b SCREWS!

SOLVED EXCESSIVE POWER CONSUMPTION

SOLVED SPACE/WEIGHT PROBLEMS

SOLVED PRECISE POSITIONING

SOLVED TEMPERATURE EXTREMES

SOLVED LUBRICATION

SOLVED DEPENDABILITY

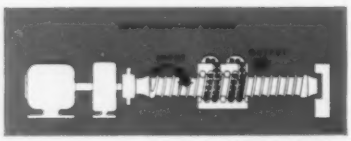
THE MINIATURE b/b SCREW

Used where *miniature* positioning/control precision and dependability is essential in telemetering and guidance systems, antenna coupler tuning, and similar diminutive actuating applications.

THE SAGINAW b/b SCREW

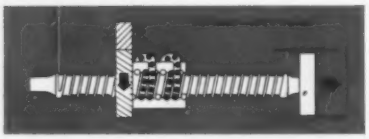
Used in afterburner controls, eleven positioners, as speed brake actuators, in clamping mechanisms for missile boosters, and many other applications.

ACTUATE AND POSITION WITH OVER 90% EFFICIENCY . . . 4/5 LESS TORQUE!



NUT TRAVELS: When rotary motion is applied to the screw, the b/b nut glides along the axis of the screw on rolling steel balls, converting rotary force and motion to linear force and motion with 4/5 less torque than acme screws.

SCREW TRAVELS: When rotary motion is applied to the b/b nut, the screw glides along its longitudinal axis on rolling steel balls, converting rotary force and motion to linear force and motion with unprecedented efficiency.



1 **SAVES POWER.** Operates with almost 100% efficiency. Saginaw b/b Screws permit much smaller motors with far less drain on electrical systems, also simplify circuitry.

2 **BROAD TEMPERATURE TOLERANCES.** Normal operating temperature for Saginaw b/b Screws is from −75°F. to +275°F. In selected materials they will function efficiently at temperatures as high as +900°F.

3 **SPACE/WEIGHT SAVINGS.** Saginaw b/b Screws are compact. They permit smaller, lighter motors and gear boxes and eliminate cumbersome auxiliary equipment.

4 **NO LUBRICATION NEEDED.** If lubrication fails, the Saginaw b/b Screw will still function with remarkable efficiency. Units have been built and qualified for operation without lubrication.

5 **POSITIONS PRECISELY.** Saginaw b/b Screws will position components far more precisely than hydraulics or pneumatics; tolerances on position are held within .0005 in/ft. of travel.

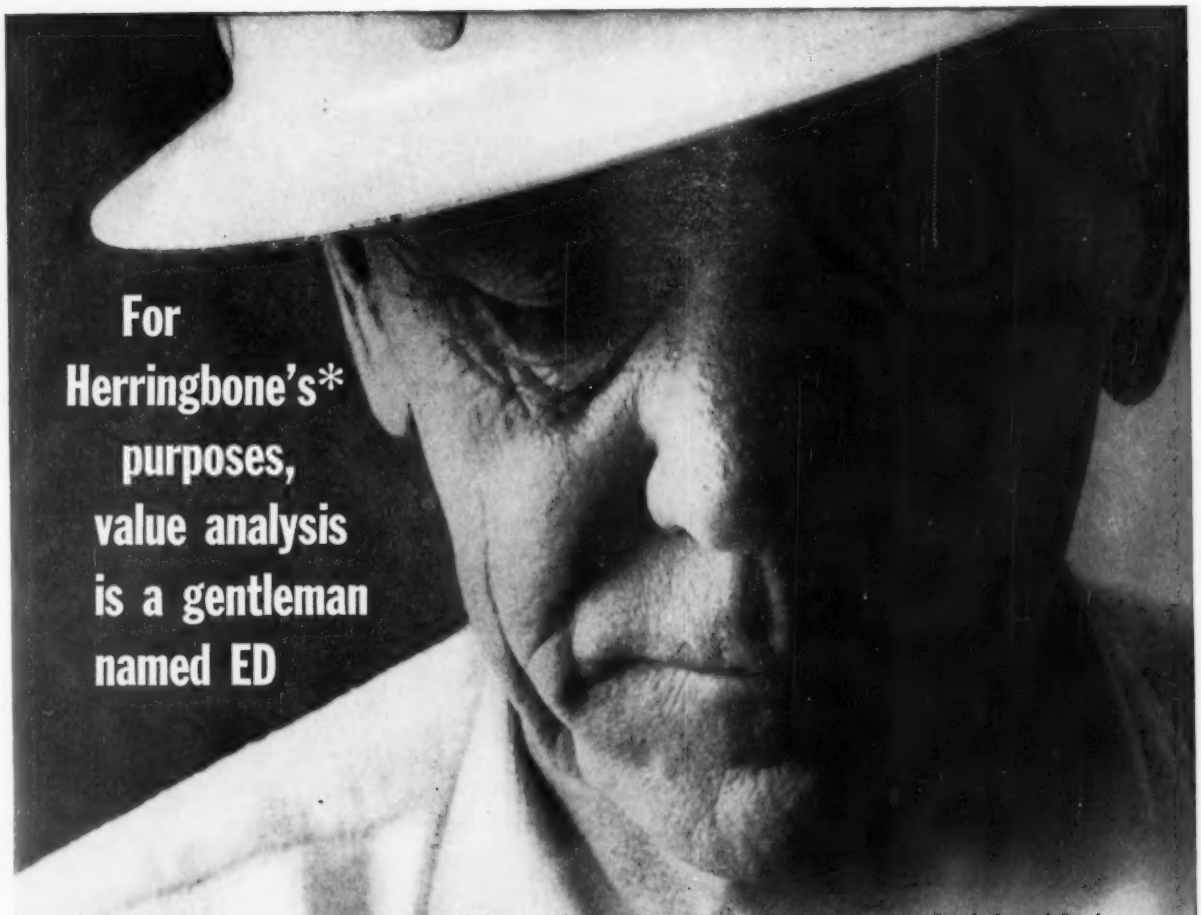
6 **DEPENDABLE PERFORMANCE.** Saginaw b/b Screws are far more reliable than hydraulics or pneumatics. Gothic-arch grooves, yoke deflectors and multiple circuits provide added assurance.

SEND TODAY FOR FREE 1959 ENGINEERING DATA BOOK . . .
or see our section in Sweet's Product Design File

Available in custom machine-ground and stock rolled-thread types. Units have been built from 1½ inches to 39½ feet long—3/16 to 10 inches in diameter.

Saginaw ball bearing Screws and Splines

SAGINAW STEERING GEAR DIVISION OF GENERAL MOTORS • SAGINAW, MICHIGAN
WORLD'S LARGEST PRODUCER OF BALL BEARING SCREWS AND SPLINES



For Herringbone's* purposes, value analysis is a gentleman named ED

Or Joe, or Sven, or whatever the name of the man is in your organization whose opinion on wire rope you most respect. You can take all the value analysis forms ever made and fill them out and get some pretty promising answers. The straightest and clearest answer you'll ever get is from the head gentleman who *works* with the rope; the same man who comes back to you and tells you that the rope he works with *doesn't work*.

We take this stand because the new Roebling Herringbone is championed by men who work with it – the first to feel the impact of a wire rope's success or failure – and the first to tell you about either.

Roebling Herringbone–the two-ropes-in-one rope–is doing things that construction operators find hard to believe–but love to admit. It has prompted a series of some of the nicest testimonials you ever saw.

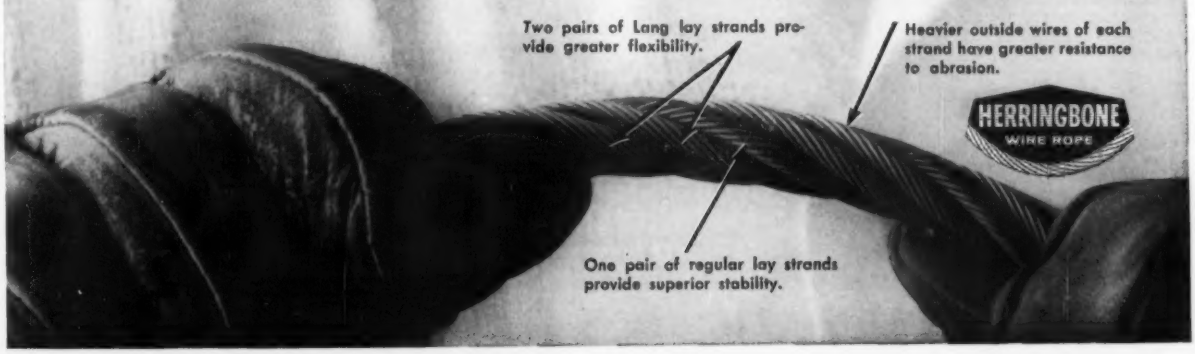
When you come right down to it, their satisfaction is twofold; after all they are working with both a Lang lay and regular lay rope in one. So they are getting the best that both types of rope construction have to give ... and that's plenty.

If you want to write us and get some pure, unadulterated field reactions, opinions from men who count, just drop a line to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. With these, we'll take the liberty of sending you the complete information on the rope that makes value analysis a sure thing by the mere specifying... Roebling Herringbone.

*Reg. Appl. For

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation


Two pairs of Lang lay strands provide greater flexibility.
Heavier outside wires of each strand have greater resistance to abrasion.
HERRINGBONE
WIRE ROPE
One pair of regular lay strands provide superior stability.

AIRCO INDUSTRIAL AND RARE GASES

ARGON
OXYGEN
ACETYLENE
NITROGEN
NITROUS OXIDE
HYDROGEN
CARBON DIOXIDE
HELIUM
XENON
KRYPTON
NEON

Saturated nitrogen vapor test chamber, custom-designed and built by Stewart-Warner, working with Air Reduction's Technical Service Organization. When readied by the technician, chamber was sealed. *Cold* nitrogen vapor then was introduced and used at approximately –300°F.

AIRCO INDUSTRIAL GASES... PART OF THE PICTURE IN CRYOGENICS ENGINEERING

at Stewart-Warner

Here's how South Wind Division of Stewart-Warner used Air Reduction Nitrogen and Helium in testing liquid oxygen valves

In testing the efficiency of liquid oxygen tank vent valves developed for missiles, Stewart-Warner utilized Air Reduction liquid nitrogen as a "stand-in" for liquid oxygen.

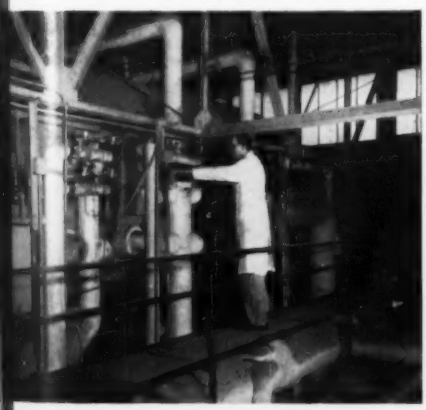
The reasons why were good ones: the data on easy-to-work-with nitrogen could be applied to predict the behavior of oxygen under similar conditions; nitrogen does not combine easily; it is incombustible.

In the vital leakage tests of the valves, Air Reduction helium was employed. Complete tightness of the shutoff mechanism was mandatory, and the high diffusion rate of helium best qualified it to serve in this phase of the testing operation.

In order to assure a steady supply of nitrogen and helium, Air Reduction's Technical Service Organization set up, adjacent to the Stewart-Warner laboratory, both a permanent installation for liquid nitrogen and a helium manifold.

This is but one area of cryogenics where Air Reduction gases—and technical knowledge—are being used extensively. Here, as elsewhere, a principal feature of Airco Industrial Gas Service is absolute dependability of supply.

If you use industrial gases, or think one of them might help improve a process or product in your operation, call in your nearby Airco Engineering Service Representative. Let him show you how your needs can best be met by Air Reduction . . . most experienced supplier of high purity industrial gases.



Refrigeration equipment for further tests. Choice of Airco assures dependable supply of industrial gases for *cryogenic* testing—from the Greek word meaning, "Creation of icy cold."

Test data and control panel. Under such precision controls, Airco gases are advancing frontiers in many industries such as missiles, aircraft, electronics, steel, chemicals, and food processing.

Airco's liquid nitrogen installation at the Stewart-Warner cryogenics lab, in Indianapolis. Helium manifold far right. These facilities make it practical to maintain reserves of both vital gases.

AIRCO®

AIR REDUCTION SALES COMPANY

A Division of Air Reduction Company, Incorporated

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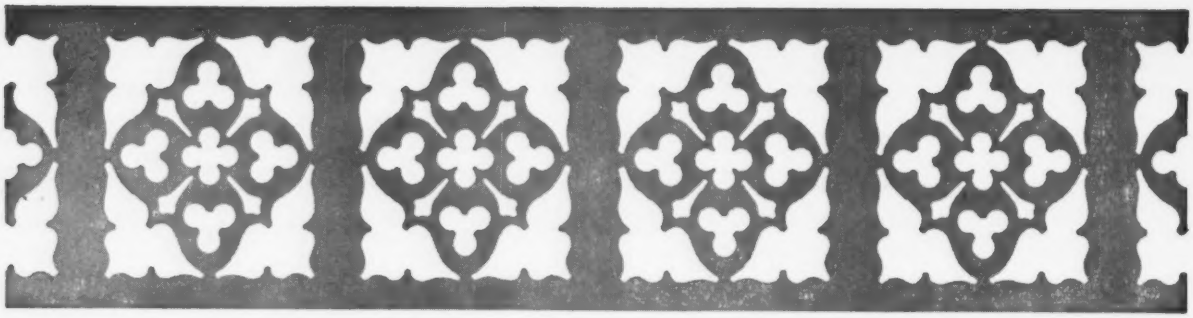

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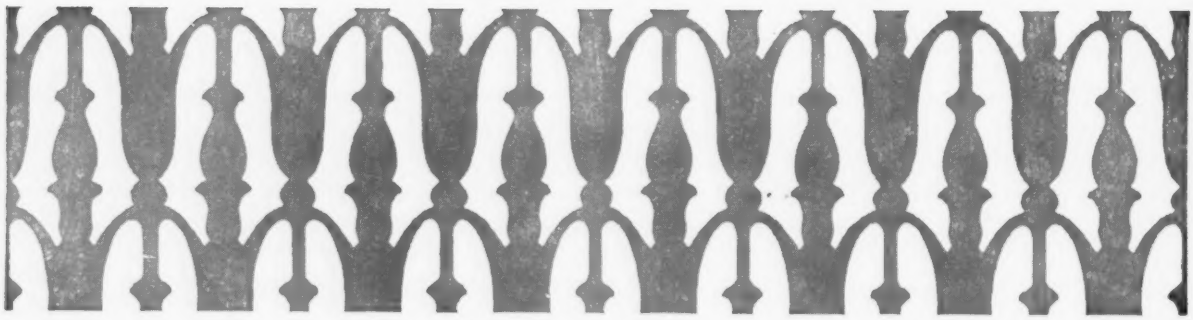

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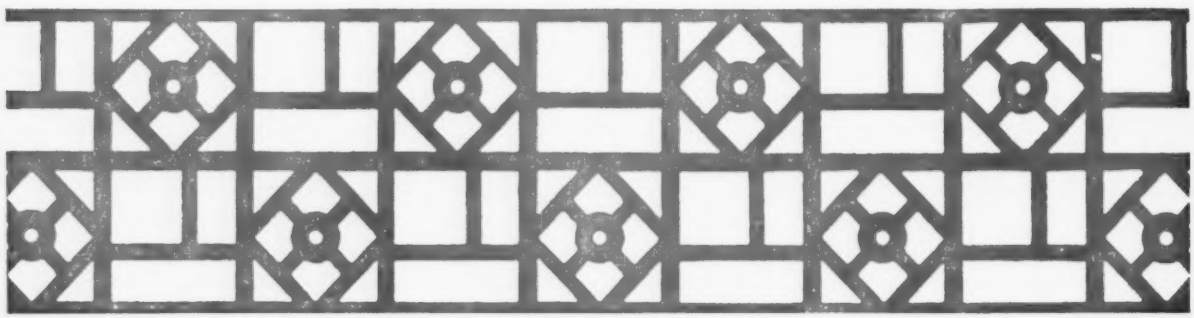

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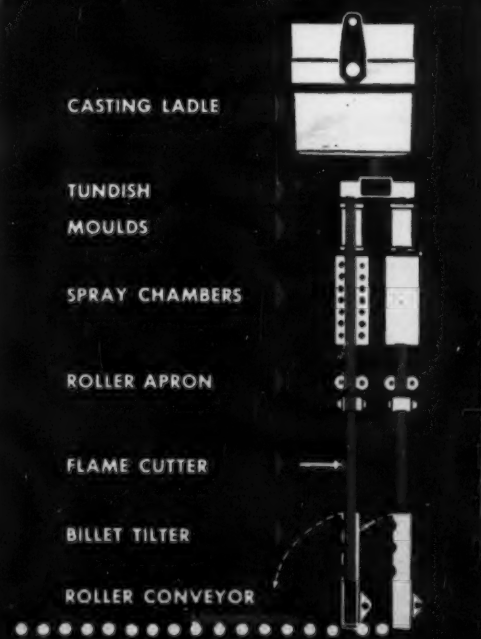

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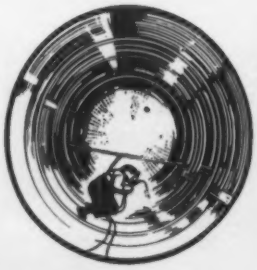

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STEEL STRIKE PEACE PROSPECTS look dim. U. S. Steel's Roger Blough has again closed the door on a settlement that would raise wage costs. He says there will be no price boost if the union and the companies are allowed to make their own settlement. But he warns government against dictating a peace that would hike employment costs.

BETHLEHEM'S A. B. HOMER holds out hope for steel price cuts in the indefinite future. He asserts this might be possible if the companies are given a freer hand in cutting operating costs.

THE LONGER THE STRIKE the slower the comeback. Some observers say both sides in the strike are mad enough so that it will last eight weeks. If that prediction comes true, damage to furnace refractories will be such that it would take six weeks for industry to raise output rate to 85 pct of capacity.

AUTO INDUSTRY will sell 6.5 million passenger cars in 1960, says the Value Line Investment Survey. It adds that the new small cars will account for bulk of the increase over 1959's estimated output of 6 million units.

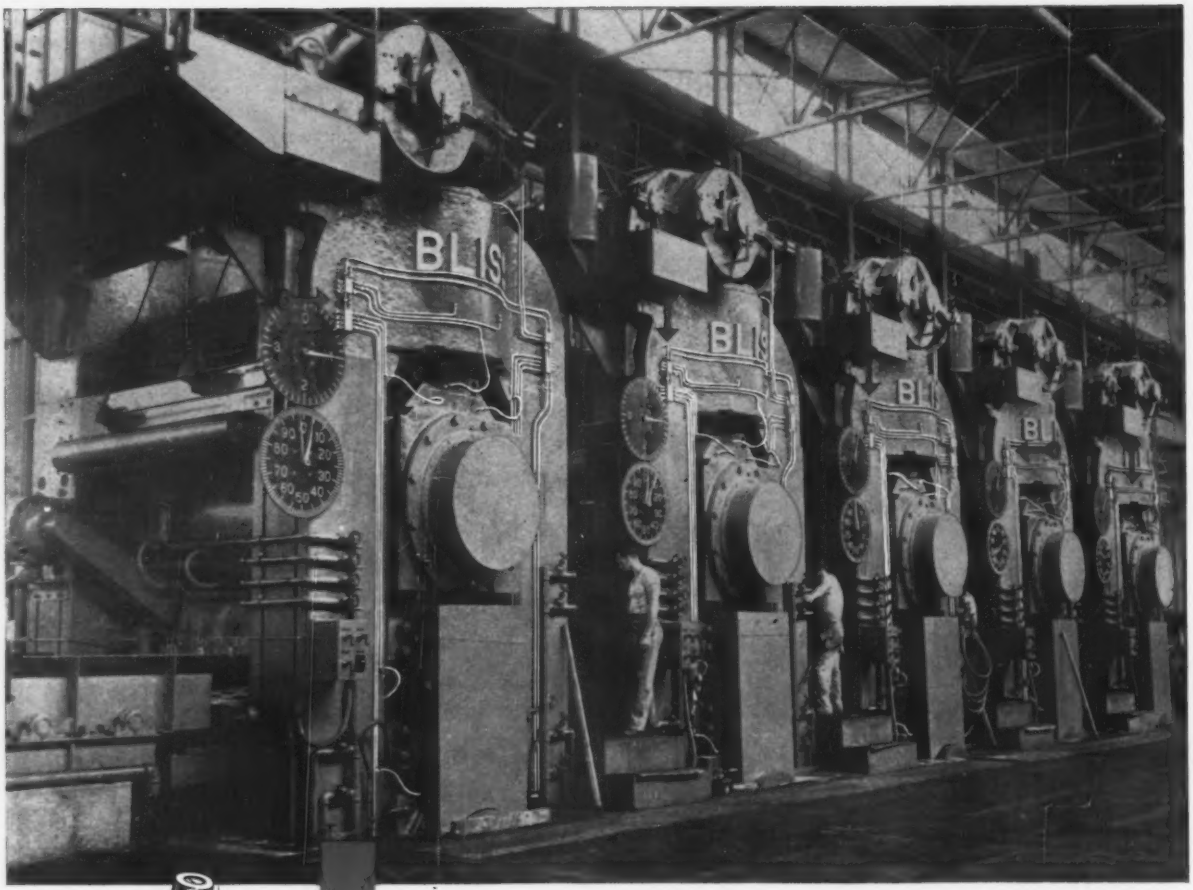
BUSINESS BOOM is bigger than we thought. So the Federal Reserve Board is adjusting its industrial production index to bring it into line with actual conditions. The Board estimates its index, with 1947-49 as 100, was about 165 at mid-year, or 10 points better than had been originally announced.

WATCH CONSTRUCTION SPENDING in the months ahead. It could have a big influence on business confidence this year and next. Right now construction is moving at a fast pace. July spending of $5.1 billion was 14 pct ahead of July 1958 outlays.

FATTER PAYCHECKS for auto workers. On Aug. 1 some 535,000 hourly paid workers received a 6.5¢ an hour pay hike under annual improvement factor in union contracts.

MORE THAN 900 MILLION LB OF ALUMINUM will be recovered from scrap this year, says the Aluminum Smelters Research Institute. By 1965 the group expects this figure to hit 1½ billion lb. A good 400 to 500 million lb of this will be aluminum products made obsolete by technological advances.

MAGNESIUM'S MARKET POTENTIAL is becoming brighter. A tip-off is Dow's apparent decision to press harder for sales through its Dow Metal Products Co., replacing Magnesium Products Dept.



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Record Steel Profits Intensify Strike Deadlock

Steel companies clung to their hold-the-line policy on a strike settlement despite record profit reports.

But timing of the announcements gives the union a prime propaganda weapon.

▪ Record second quarter steel profits—clearly reflecting the pre-strike buying spree—offer the United Steelworkers a choice propaganda target.

As the large earnings were announced last week Dave McDonald and the USW lost little time in pointing to the industry's "astonishing profit record." Mr. McDonald quoted from profit statements of U. S. Steel and other steelmakers in another attempt at government solution of the three-week strike.

No Concessions—The Corporation's earnings, Mr. McDonald contended, clearly "demolished all of the claims made of inadequate progress (of the employees) by the steel corporation." And he charged that "only the facts (in the earnings statement of U. S. Steel and others) are necessary to establish that the crisis in steel has been created . . . in complete disregard of those facts and of the welfare of the entire nation."

Despite these attacks, steel industry spokesmen refused to concede that profit rates are abnormal or any cause for embarrassment. They redefined in bold terms the industry's hold-the-line basis for settling the steel strike. And they barred the door on a steel price increase—unless the eventual truce is on a dictated basis. (See story on p. 43.)

Blough on Prices — Declared Roger Blough, Chairman of the Board of U. S. Steel: "Whatever the length of the strike, and whatever the eventual outcome of the negotiations—so long as they are voluntary — we in United States Steel do not intend to raise the general level of our steel prices in the foreseeable future."

Arthur B. Homer, president of Bethlehem Steel, backed Mr. Blough's stand, adding, "Our customers are supporting us fully in our position of hoping to work out

Industry Leaders Comment on Steel Profits

Charles M. White, chairman, Republic Steel Corp.—"Results of the first six months were attained, to a major degree, as a result of robbing business from the third quarter —orders which would ordinarily have been placed, produced, and shipped in July and August . . . There are (also) evidences of real improvement in our performance . . . the direct result of expenditures in recent years of three quarters of a billion dollars in new and better plants and equipment . . ."

Roger M. Blough, chairman, U. S. Steel Corp.—"The earnings of the steel industry are not in any way excessive. Its shipments in the latest quarter increased an estimated 82.1 pct over those of the same quarter last year . . . and when we have an increase like that, I would think something was definitely wrong if we didn't have an increase in earnings."

Joseph L. Block, chairman, Inland Steel Co.—"Record steel mill shipments and excellent volume at warehousing and fabricating operations were responsible for the new highs established for both quarterly and six months sales."

Charles R. Hook, chairman, Armco Steel Corp.—"Although the record level of business was the principal reason (for higher earnings), we also realized important benefits from the modernization and improvement program on which the company spent over $250 million in the last four years."

Avery C. Adams, chairman and president, Jones & Laughlin Steel Corp.—"Record earnings in the second quarter were the result of an operating rate of 94 pct of capacity; a shipping rate in excess of the operating rate; and the effect of our cost reduction and expansion which involved an expenditure of $676 million in the past ten years."

Steel Earnings—1959 vs. 1958

COMPANY	Second Quarter 1959	Second Quarter 1958
U. S. Steel	$148,363,193	$73,224,051
Bethlehem	73,591,528	29,003,419
Republic	40,245,132	15,321,096
Armco	29,441,030	11,626,179
Jones & Laughlin	26,468,000	4,034,000
Inland Steel	24,313,291	12,118,584
National	22,957,018	6,527,762
Youngstown Sheet & Tube	17,162,941	4,236,641
Colorado Fuel & Iron	7,983,920	1,063,388
Wheeling	6,540,000	2,464,000
Crucible	5,109,855	226,932
Pittsburgh Steel	2,670,903	563,778*
Granite City	4,838,563	1,839,401
Allegheny Ludlum	7,819,467	646,067
Kaiser Steel	6,895,020	2,550,711
Detroit Steel	3,023,921	1,839
Alan Wood	1,141,057	305,998
Copperweld	1,996,543	94,633*
Continental	1,707,426	1,088,915
Sharon	2,480,052	735,721*
Acme	2,592,125	1,137,369

* Indicates loss.

a non-inflationary settlement."

Reasons for Profit—Bethlehem's earnings report, and those of other companies, underscored the real reasons for the great improvement in profits: Stronger buying by customers following the 1958 recession. Inventory stockpiling against the present steel strike. And improved operating efficiency by the steel companies themselves.

The nation's steel mills functioned at peak levels during the second quarter of this year. The operating rate was 93 pct of capacity in April, 92.5 pct in May, and 89 pct in June. Contrast this with 47 pct for April 1958, 52 pct for May, and 61 pct for June.

During the second quarter this year the industry produced 33.7 million tons of steel compared with only 18.9 million tons in the same period last year.

What They Did—U. S. Steel: Set a new first half record with earnings of $254 million.

The Corporation also produced and shipped more steel in the April-June period than in any previous quarter. Net earnings in the second quarter were $148 million, well over the $73 million made during the same period last year. Previously U. S. Steel's best second quarter was in 1957 when earnings were $115 million.

This year's second quarter profits brought the Corporation a return of 10.2 pct on sales—the largest ratio since modern records were compiled beginning in 1943.

Bethlehem Steel: The nation's second biggest steelmaker, also established new first half records in production, sales, and shipments. In addition, net income for the second quarter—$73.5 million—was the highest for any quarter in the company's history. Previous high was $61.7 million made in the last quarter of 1956.

Republic Steel: First half shipments of more than 4 million tons were only 10.3 pct below the company's total shipments during all of 1958. Republic's second quarter earnings of $40.2 million topped the former quarterly high of $34.5 million made in 1956.

Profits during the recession-bound second quarter of '58 were only $15.3 million. The company's earnings in the initial six months of this year were equal to 8.6 cents per sales dollar, the best return since the first half of 1950.

Jones & Laughlin Steel: Established new records in production, sales, shipments, and profits. Sales during the first six months this year were $552 million, compared with $300 million last year. Net income for the first six months was $42.2 million, well above the $5.6 million made in the initial half of 1958. Second quarter earnings this year —$26.4 million—were greater than last year's $4 million.

National Steel: Had the highest ingot production, sales, and shipments in its history. Second quarter net income was $22.9 million as against only $6.5 million in second quarter '58. Profits for the first six months this year were $39.4 million, compared with $10.3 million last year.

Armco Steel: Second quarter earnings of $29.4 million were more than double the $11.6 million earned in the same period of 1958. First half profits soared to $50.6 million, far above the $20.9 million of the first half of last year.

Inland Steel: Profits in the second quarter and first half were more than double those of the same periods in 1958. Income for the first half this year was $42.1 million, contrasted with the $20 million earned in the first six months last year. The 1959 first half earnings established a new company record, eclipsing the $29.7 million earned in first half 1957.

Second quarter income at Inland this year was $24.3 million, well above the $12.1 million of 1958. It was also greater than the previous quarterly record of $17.8 million made in the initial three months of 1959.

Kaiser Steel: Second quarter profits more than doubled those of the first quarter. Earnings in the April-June period this year were $6.8 million, as against $3.3 million in the first quarter. During second quarter 1958 earnings were $2.5 million.

Big Steel Lays It on the Line

No Price Hike Barring "Forced" Cost Rise

U. S. Steel chairman warns government against consequences of dictated settlement.

Statement closes door on voluntary wage cost increase.—By Tom Campbell.

▪ Last week U. S. Steel board chairman Roger Blough blocked off another escape hatch of the Steelworkers in their drive for a big wage and fringe package.

At the same time he warned public bodies and authorities that it would be on their heads if they mandated U. S. Steel into an involuntary wage settlement.

The hard-headed but soft spoken Pennsylvania Dutch steel chief again slammed the door on any wage cost increase unless it was subsidized by changes in wasteful working practices he says are in the old contract.

Homer Agrees — Mr. Blough's views were seconded by A. B. Homer, president of Bethlehem Steel Co., who also suggested that steel price cuts might even be possible should the companies have more freedom to cut costs in the plants.

Mr. Blough's press conference and formal statement made the following points:

U. S. Steel is not going to raise the price of steel no matter how long the strike lasts or what the settlement is so long as it is voluntary.

Conversely, if U. S. Steel is forced into a wage settlement it thinks is harmful it may have no recourse but to raise prices.

It will resist all attempts to force it into an involuntary wage settlement.

Serves Notice — What is the meaning of this statement? For one thing it is a notice to the White House and to Senators unnamed that U. S. Steel is not going to be a party to another wage-price go-around. It assumes other steel firms will take the same position. If U. S. Steel does not raise prices no other firm can realistically do so.

It is a clear-cut and coldly worded message to the union that there is little room to move around in to arrive at a wage settlement. The only "out" is some kinds of legal language in the contract which the steel firms believe will counteract their local practices "frustrations."

U. S. Steel's Philosophy — The Blough statement is a restatement of all past philosophies of anti-inflation sentiment expressed by U. S. Steel's chairman over the past two years. It backs up and ties more firmly together the 12 steel companies who have the union about up against the wall.

It also dooms any early end to the steel strike. It places both sides farther apart than they have been at any time in 12 weeks. It also makes it rough going for those in steel, in government, and in the Administration who felt there was a chance to regain the flimsy "area of agreement" which existed—temporarily—before the union struck.

McDonald's Position — But it clarifies the price angle and leaves Dave McDonald trying to sell the public on "exhorbitant" profits—which he claims are big enough to pay a wage increase. Mr. Blough counters by saying the steel industry profits are not exhorbitant. He stressed that they are needed to keep the company strong and in condition to meet employment costs and foreign competition—and to furnish money for expansion and replacement.

Blough Clarifies Price Issue

Roger M. Blough, chairman of U. S. Steel Corp., says his company intends to hold the line on steel prices barring "an involuntary settlement (of the strike) mandated by some public body or authority."

In a statement following the quarterly meeting of U. S. Steel's board of directors last week, Mr Blough had this to say:

"Whatever the length of the strike, and whatever the eventual outcome of the negotiations — so long as they are voluntary—we in United States Steel do not intend to raise the general level of our steel prices in the foreseeable future.

"We believe that competitively this is no time to raise prices. We know that employment costs abroad are but a fraction of our own. We know that imports of foreign steel and products made from such steel are increasing. And we know the tough competition that steel faces from other materials produced domestically. These things alone would dictate a hold-the-line position on prices.

"We believe, therefore, that the long-range interests of all employees and our customers and stockholders will best be served by this policy.

"If events dictate a change in our situation next year, we will necessarily be required to take whatever steps are then indicated—but as of now we foresee no general increase."

Depreciation: Reform Is Coming

Industry Gets More Sympathetic Ear in Washington

Senate Small Business Committee hears why depreciation rules should be revised.

Reform may be long coming, but at least industry is getting a fair hearing.

▪ Industry's drive for a better break on depreciation is receiving a more sympathetic ear in Washington.

It will be months before sympathy is translated into real hope for tax relief, and opponents of reform are sure to throw up formidable roadblocks. But at least more people in a position to do something are paying closer attention to what industry has to say.

Sounding Board — The Senate Small Business Committee, headed by Sen. George Smathers (D., Fla.), provided a convenient sounding board for industry's views during an all-day hearing last week.

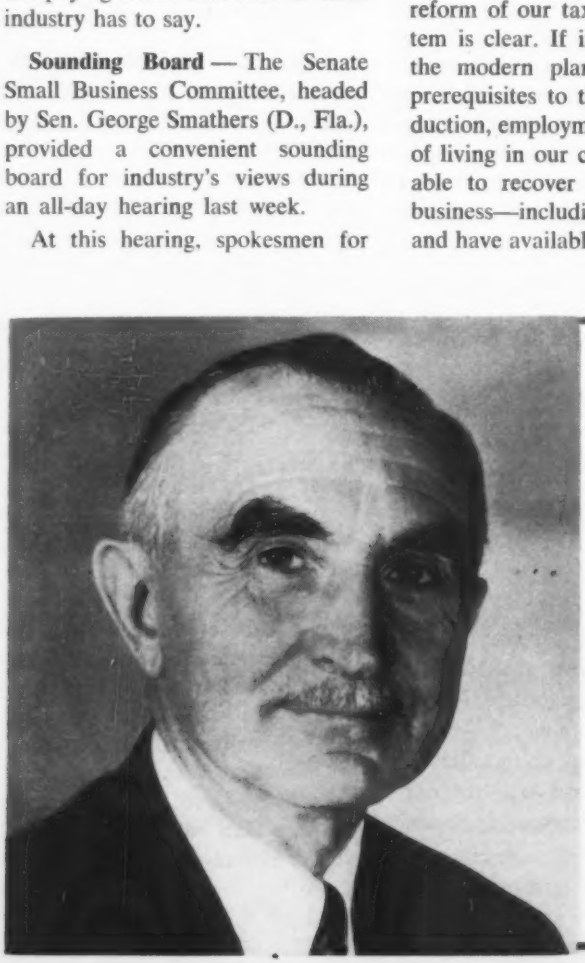
At this hearing, spokesmen for small business groups, equipment manufacturers, and an economic foundation made these points in arguing for change in existing depreciation rules:

1. "The United States is the most backward nation in the world today in matters of depreciation policies. Our existing depreciation laws are simply not realistic. As a result, our defense effort is being impeded, our economic growth is being held back, and we are failing to develop technologically."**—Joel Barlow, Washington tax authority and counsel to a group of capital equipment manufacturers.**

2. "I believe the need for proper reform of our tax depreciation system is clear. If industry is to have the modern plant and equipment prerequisites to the growth of production, employment, and standards of living in our country, it must be able to recover all cost of doing business—including depreciation—and have available to it an adequate source of funds."**—Robert Leeson, president, Universal Winding Co., and vice president, American Textile Machinery Assn.**

3. "These unrealistic depreciation rates greatly handicap small business. Capital which should be going into new equipment to meet the squeeze of high costs and low profits is unavailable. So business, to modernize, must rely on high-taxed income or attempt to borrow or obtain equity capital. Faster depreciation write-offs would help stimulate the economy and generate more jobs."**—Frank M. Cruger, vice president, Machine Products Corp., Dayton, O., and vice president, National Small Business Men's Assn.**

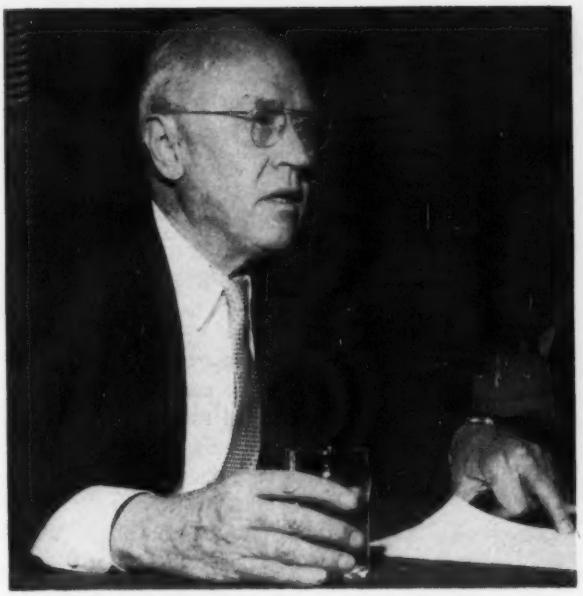
4. "About $26 of tax revenue for the Treasury is generated by each $100 spent by business for equipment and machinery. Conversely, at present corporate rates the Treasury would lose up to $52 income tax on each additional $100 of non-taxable depreciation allow-



"...Tell Your Story to the People..."

"There is a need for you people (machinery industries) to tell this story to the people. There is nothing here that has been proposed today that will cheat the taxpayer."

—Sen. Wayne Morse (D., Ore.)
Senate Small Business Committee



M. E. PELOUBET: Bring depreciation laws up to date.

JOEL BARLOW: "Depreciation laws are not realistic"

ance. This loss could be made up by doubling the depreciation allowance, since an expenditure of $200 for new property would generate $52 of new tax revenue. Thus, if the entire $200 were spent for new equipment, there would be no tax loss to the Treasury whatever." **—Maurice E. Peloubet, accountant, speaking for American Economic Foundation.**

5. "What we believe is necessary is that some system be worked out which will prevent a major drawdown on a small company's cash reserves at a time new equipment is purchased because the depreciation reserve set up for the old equipment was not sufficient over the long run to replace the old equipment with the new." **—I. D. Shapiro, United Iron & Metal Co., Baltimore, spokesman for Institute of Scrap Iron & Steel, Inc.**

Would Solve Problems — Mr. Barlow told the committee that depreciation reform would go a long way toward solving the problem of foreign competition and tariffs.

"I am convinced," he said, "that realistic depreciation plus the ingenuity of U. S. industry will take care of the problem of imported machinery and other imported items so that it will become unnecessary to worry about whether we should raise tariffs or impose quotas on foreign goods coming into the U. S."

Small Business Handicap — Mr. Barlow also made the point that unrealistic depreciation fosters economic concentration:

"Small firms have trouble competing, and they fall by the wayside. As a result, only the largest firms survive, partly because they get a better break on depreciation.

A Recommendation—"My recommendation, and that of the machinery manufacturers, is that we adopt the so-called bracket method of depreciation. A taxpayer can elect any rate within a given bracket. This differs somewhat from the Canadian system, in that a taxpayer must choose between a low and a high, instead of having only an upper limit."

Mr. Peloubet pointed to the growing erosion of capital assets because of inadequate depreciation.

An Important Difference—"The annual difference between what is spent for plant and equipment and what should be spent for such purposes is estimated authoritatively at about $4 to $6 billion. It has now built up to $95 billion as of last autumn, and may now be $100 billion or more.

"In order to acquire new equipment to replace the economically obsolete, many firms are driven into long-term borrowings which dilute equity investments. This is an invisible drag on capital investments and on the U. S. economy as a whole."

Industry has been further encouraged by the fact that Treasury has undertaken a poll of U. S. machinery users for their views on depreciation. The results of this survey will determine what the Treasury Dept. will recommend on depreciation legislation to the House Ways and Means Committee in November. And what the Committee recommends will go a long way toward deciding what the Congress will do in the way of new legislation to ease industry's burden in this respect.

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New Ruling Haunts Automakers

They See Danger in Payments to Strike-Idled Workers

The union in Michigan hasn't as yet used unemployment compensation to augment its strike fund.

But automakers feel they are vulnerable. They want the law changed.—By H. R. Neal.

■ A change in the legal interpretation of one word could cost automakers millions of dollars in future years.

Last January, the Michigan Supreme Court handed down a decision that Ford workers in the state, idled in 1953 by a strike at another Ford plant in Canton, O., were eligible to receive unemployment compensation for the period they were out of work (The IRON AGE, Jan. 22, p. 29).

Earlier Meaning — Michigan's Employment Security Act provides that workers are disqualified from receiving benefits if they are unemployed due to a labor dispute "in the establishment in which he is or was last employed." The crucial element in the case was the interpretation placed on the word "establishment."

In 1941 the state's highest court held that workers in eight Chrysler plants, who were idled by a shortage of material caused by strike in another Chrysler plant, were not eligible to receive unemployment compensation. The "integral functioning" of the plants made them part of the same "establishment."

New Definition—The latest decision discards "integral functioning" as the basic or primary test of whether or not several plants are part of the same establishment. The court said the earlier decision had been stretched too far—geographically. It pointed out that in the Chrysler case the plants had been located within 11 mi. of each other.

In redefining establishment, the court mentions eight factors which are now to be considered. They are: Separate and distinct employment offices; separate and distinct local unions or local labor-management agreements; separate and distinct employee seniority rights; separate and distinct industrial relations offices; separate and distinct plant managements; separate and distinct plant production schedules; physical proximity of the operations; and general unity.

Case Backlog Growing — The new ruling hits the multi-plant empires of the automakers hard.

While awaiting the outcome of the Ford case, the Michigan State Employment Security Commission built up a backlog of 59 cases which would be affected by the decision. It only recently handed down its rulings on the first seven.

About 1400 workers are involved in these first decisions, most of them stemming from the auto industry's stormy post-bargaining period last year. Nearly 30,000 workers are involved in the 52 cases yet to be decided.

Dangers Are Apparent — To manufacturers with integrated multi-plant operations, the dangers that lie ahead are clear. The union can strike selected plants while non-strikers in affected plants collect unemployment benefits. Employers will be supporting strikes against themselves.

Labor's Side of the Story

■ The United Auto Workers International says that the auto companies are fretting needlessly over the Michigan ruling in favor of unemployment compensation for workers idled by strikes in plants other than their own.

The union points to a dozen other states which have ruled the same as the Michigan Supreme Court. Among them is New York, which uses the same wording as Michigan for its law.

Reassuring Words—Besides, the union points out, if it intended to use the ruling as a means of building its strike fund and conquering multi-company plants piecemeal, why didn't the union use these tactics last year? Claims then would have totaled several hundred thousand dollars instead of just thousands.

But the automakers aren't to be pacified by the soothing reassurances of the UAW that it wouldn't think of using unemployment benefits to augment its strike fund. They feel they are vulnerable to just such tactics because of their heavy concentration of independent operations in Michigan. They want the law changed.

Dim Prospects — However, the weight of the law seems to be against the automakers. For the present, at least, they will find it just about impossible to muster enough support in Michigan's feuding legislature to ram through any changes to the law as it now stands.

See Little Change In Defense Spending

Defense spending will remain at current levels for another year.

Congress, after long wrangling, has approved a "non-inflationary" $39.3 billion missile-age defense money bill with strong emphasis on toughening up U. S. defenses against planes, missiles, and submarines.

Who Gets What — As finally drafted by Senate-House conferees, the new money bill will provide $17.5 billion for the Air Force; $11.2 billion for the Navy; $9.4 billion for the Army; and another $1.3 billion for joint Defense Dept. projects.

Some of this money will be spent this year, some in later years. But the combination of the new appropriation and money left over will produce defense buying in the current fiscal year of about $41 billion —the same as last year.

Comes Close—The measure is described as non-inflationary because it is within a few million dollars of President Eisenhower's original request. It restores most of the $400 million cut by the House, but also deletes most of some $300 million added by the Senate.

Here are some of the highlights:

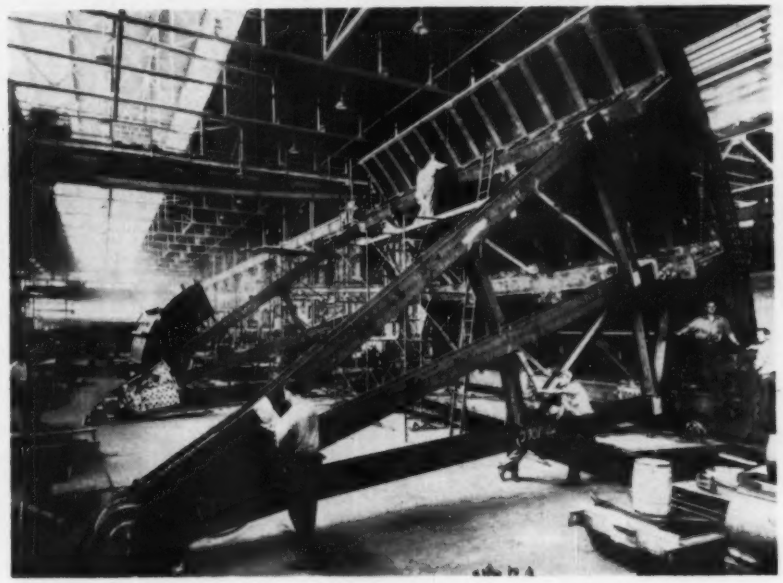
Approval of $137 million for stepped-up purchases of the Army Nike-Zeus anti-missile missile, and $338 million for modernization of other Army missile programs.

Permission for the Navy to start purchasing long lead-time items for a nuclear-powered aircraft carrier. Only $35 million is included now, but the rest of the $380 million total cost will come as needed.

Stepped up production of the Air Force intercontinental Atlas and Minuteman missiles with an extra $172 million, plus an extra $80 million for work on the Bomarc missile.

Funds for stepped up anti-submarine defense, including money for a nuclear-powered anti-submarine sub.

If It's Worth Doing At All . . .



CLOSE FIT: This 100,000-lb steel gate, for the Winooski River Basin part of the Waterbury, Vt., dam, is solid proof that you can realize a number of savings if you do a job right. It was carefully constructed by Steelweld Div., R. C. Mahon Co., Detroit, to minimize on-site costs. When it was installed, no adjustments were necessary. And it is so well balanced it can be actuated by a five hp motor.

Condenser to Save

A 2600-sq-ft vapor condensor now being built by Chicago Bridge & Iron Co. will reclaim valuable heat from spent sulphate black liquor vapors in a pulp and paper mill in Brazil.

The piece is being fabricated from 304 stainless tubing from the Carpenter Steel Co. The fabricator and buyer estimate that the condensor will save about 19 million BTU's per hour, amounting to $10 per hour, or about $40,000 per year.

Scrap Still Exempt

President Eisenhower has signed legislation continuing for another year the suspension of import duties on metal scrap.

The scrap import duties were first lifted during World War II, and have been null since. The legislation affects tariffs on almost every type of metal scrap, except copper. This is covered by a special law which re-imposes the duties if the domestic price reaches a floor.

Closed-Die Forging

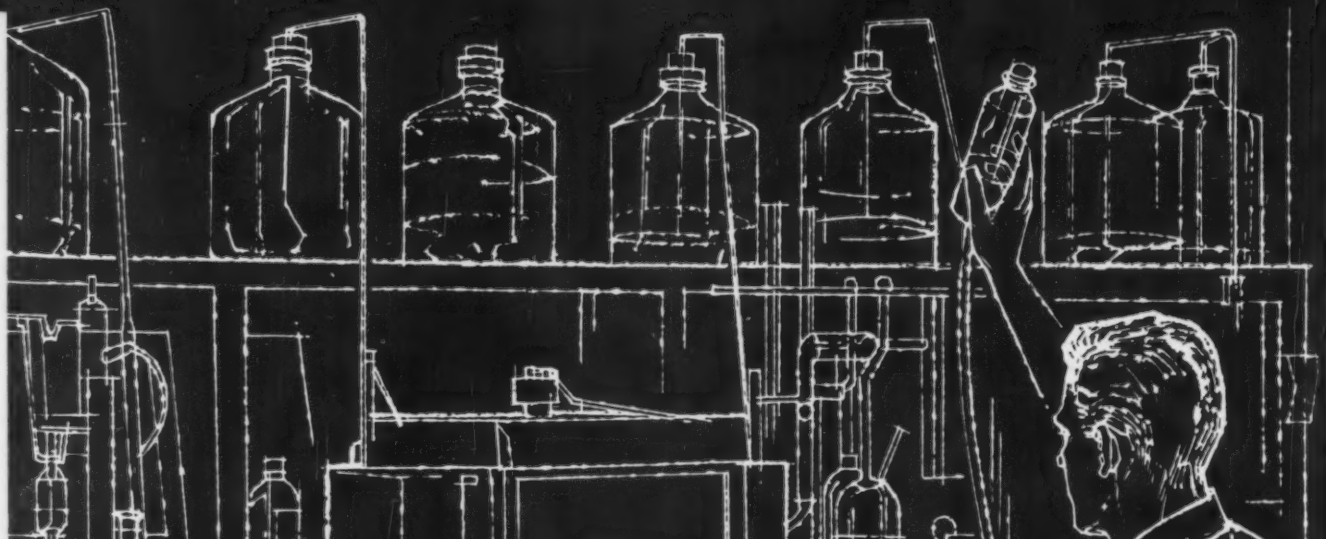
New nose cones for the Air Force Atlas ICBM and IRBM are the largest copper closed-die forgings ever made, says Wyman-Gordon Co., Worcester, Mass. W-G did the research and production on the nose cones.

The forgings are more than 5 ft in diam, 2 ft deep and 1¼ in. thick. They weigh nearly a ton each.

Canadian Tube Mill

Construction of Canada's biggest steel pipe mill will start "within a few days," at Camrose, Alberta.

Page-Hershey Tubes, Ltd., and The Steel Co. of Canada, co-owners, said that the new $10 million facility will be the first mill in Canada, and probably the world, to make steel pipe larger than 36-in. diam in continuous 40 ft lengths.



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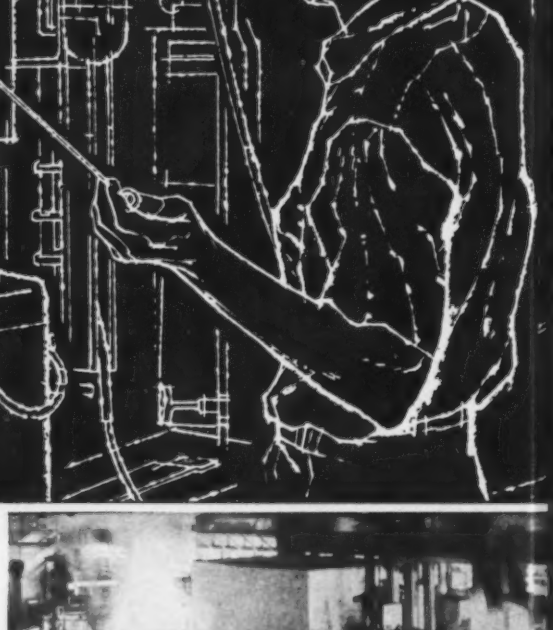

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Making Statistics More Useful

Efforts to refine and sharpen economic indicators continue getting attention.

Latest move: Revision of the industrial production index so it more accurately reflects total output.

▪ Economic indicators—the handy benchmarks used to chart the nation's industrial health—are only as good as the data they contain. And in today's expanding and complex economy keeping them meaningful is difficult.

That's why word the Federal Reserve Board is revising its industrial production index is encouraging. The move offers proof the economic statisticians are not standing still. They are continuing efforts to refine and amplify business data so it will be more useful.

Ten Points Higher—The industrial production index is the FRB's measurement of output in the durable, nondurable, and mineral industries. Previous estimates for June placed it at 155, considering output in the years 1947-1949 as a base of 100.

Now FRB Chairman Martin, discussing the coming revision, says the refined index "will show output at a level of around 165 for mid-1959."

This will put the seasonally adjusted rate for last month a full 10 points higher than originally believed. It also means production during the 1958 recession did not drop off as much as previously indicated.

Better Measure—Several reasons are given for the revision. The existing index, says the FRB, didn't take into account the tremendous growth in some sectors of the economy during the last ten years. In the future these will be more closely charted. And from now on the index will include some important industries, such as natural gas production, neglected in previous tabulations.

This move to better the index is not the first—and won't be the last—major effort to sharpen the nation's economic statistics.

Last December the Dept. of Commerce made another contribution when it began reporting gross national product in both current and constant dollars. By this method Commerce provided a better tool for accurate analysis of national income and output in terms of price changes.

Focus on Inflation—When GNP was charted in constant dollar figures, for example, it was evident demand and output in "real" terms stopped growing in 1958 even before the recession began. But price rises and current dollar values camouflaged the change until later.

Improving economic indicators helps in two important ways: It provides more reliable yardsticks against which to measure the economy. And it offers more accurate data for use in solving industrial conundrums such as the steel strike.

Watch Construction Spending

▪ Keep an eye on construction spending in the months ahead. How much is spent, especially for highways, will have an important influence on business confidence this year and next.

Right now construction is moving at a strong pace. During July, Commerce estimates, new construction put in place totaled $5.1 billion—a gain of 3 pct over June. The rate was 14 pct above the $4.5 billion spent in July 1958. In addition, construction work completed in the first seven months this year amounted to $30.1 billion—15 pct ahead of the same period in '58.

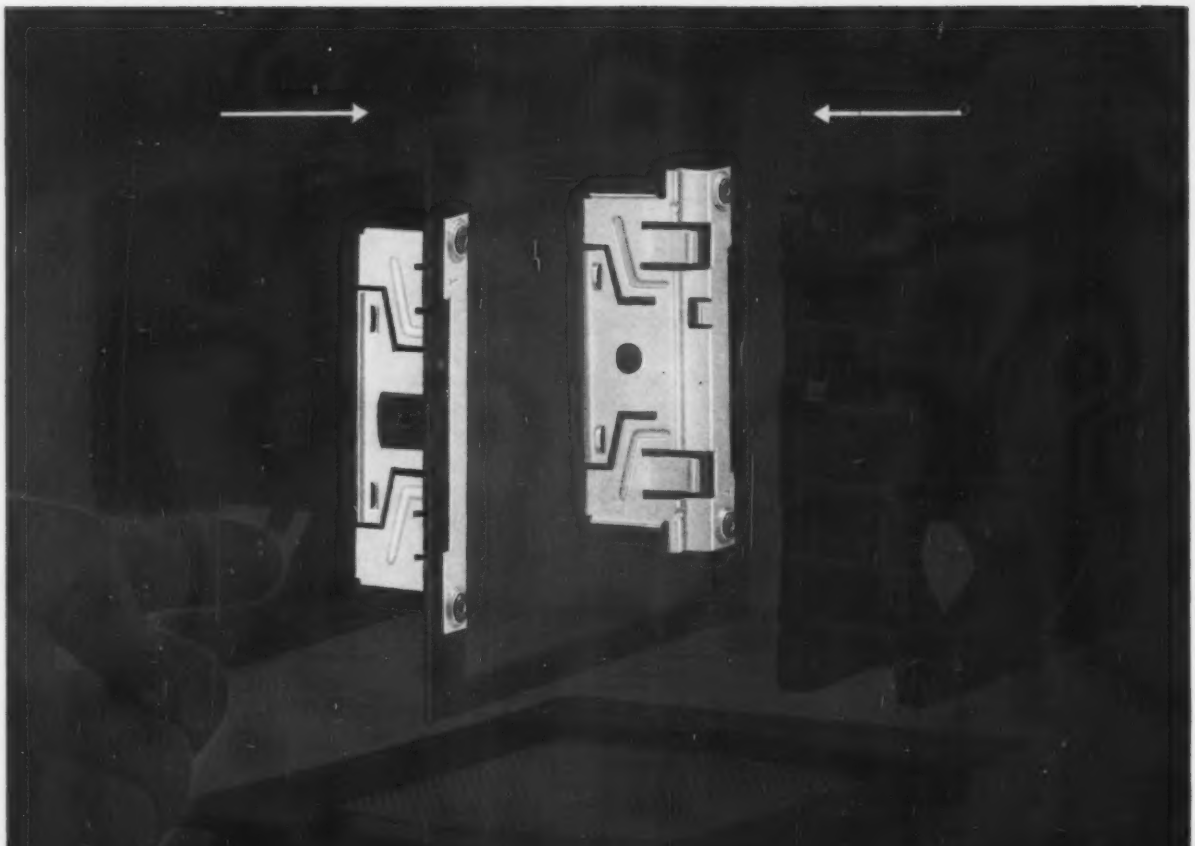
Spending Roadblock — But, despite this, there's concern about the outlook for road construction from now on. The most serious problem is the Congressional dilemma about future financing of the Federal Highway System.

When Congress set up the program in 1956 it was supposedly put on a pay-as-you-go basis financed by federal gasoline taxes and other levies on highway users. But revenue into the program's Highway Trust Fund has not kept pace with outgo.

Different Views—To meet the deficit the Administration wanted a 1½¢ boost in gasoline taxes.

Congress, rejecting this, has countered with a plan calling for a $1 billion bond issue. In addition part of the auto excise tax would be transferred into the Highway Trust Fund.

The Congressional proposal would require a stretchout in road construction an additional four years. And while the program would continue interrupted it would be at a reduced level of activity.



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Why Management Has Difficulty Handling Problem Employees

By **Robert N. McMurry,** President, The McMurry Company, Chicago

Problem employees exist at all company levels. But management often doesn't know just how to cope with them.

This first of a three part series tells why this is so and what stands in the way of a sound course of action.

▪ Nearly every business has its quota of hidden costs. And these may make the difference between the success and failure of the enterprise.

The most universal, devastating, and often unrecognized, of these hidden costs can be in the company's problem employees.

These problem cases are infinite in their number and variety. Moreover, they are found at all levels of the company. The janitor may be one; so may the company president. Problem behavior ranges from simple, harmless eccentricity to major maladjustments and psychoses which may threaten the very life of the business itself.

The Minor Cases—Among the milder manifestations of problem behavior are such annoying but essentially harmless conditions as chronic tardiness, laziness, carelessness, disinterest and lack of initiative, or technical incompetence.

These are sources of irritation, but may usually be corrected by training and stricter discipline. Their costs are negligible.

A more serious category of problem cases includes hypochondriacs (those who enjoy ill health), those with chronic financial or domestic trouble, the hyper-suspicious, alcoholics, the chronically contentious and demanding, and the insubordinate.

Such employees are costly because they are often disruptive to the routines of a business and because they require an excessive amount of supervision. It has been estimated that 20 pct of the employees require 80 pct of the time of the supervisor.

Logic Won't Work — Furthermore, many employees are rarely fully productive and all too often lower the productivity of their associates. The problems which they create are much more difficult to remedy because their roots tend to be deeply imbedded in their personalities.

Because these people are to some

The Problem Employee
Part 1 of a Series

NEXT WEEK: Remedial Action.

Problem employees don't have to stay that way. Next week Dr. McMurry takes up the courses open to management in solving different kinds of problem behavior.

COSTLY CONTROVERSY: Demanding, chronically contentious problem employees take up far too much of a supervisor's time.

degree mentally ill, they cannot be influenced by logic, discipline, or other rational approaches. The cost of these problem cases may be substantial, although it is usually well-hidden.

The Costly Problems—The third and most costly category of problem cases includes those which are most serious because they are often the most subtle and difficult to detect. The individual here is not obviously disturbed; nevertheless, he may do great damage.

Included here are the brilliant but malcontented (the technically superior professional who resents management's status); and the psychopathic personalities (the men who hate) who are disruptive and destructive for the joy of making trouble for its own sake; and the senile (the brilliant executive whose mental processes are beginning to deteriorate with age).

It is these three latter groups of problem cases who are especially costly to the enterprise:

The brilliant malcontent, with his warped logic, may create disaffection among large sections of the employee group.

The senile executive, unrecognized, may make serious errors in judgment at the management level.

The psychopath may have inherent destructive tendencies. At the factory level, for example, he is the one who welds objects into gas tanks "just for kicks."

Where Management Errs — In dealing with these problem situations, management is often handicapped by three serious sources of error in its handling of people.

The first is that it is very difficult for the typical executive to conceive that his subordinates may have radically different beliefs, standards and attitudes from his.

He may agree that people in general have varying beliefs, standards and opinions, but these are not **his** people, the people with whom he is in intimate, daily contact on the job.

Second, many of the moral and ethical standards and principles of businessmen are based upon theological assumptions rather than empirical research, that is, research based on studies, experience and observation.

Thus, for example, it is believed by many that every man at heart is kindly and well disposed and is desirous of helping his fellows. Unfortunately, there is no valid evidence that this is universally a fact.

Also, it is assumed that man is not only desirous of perfecting himself, but is able by an act of will to do so. In other words, if he tries hard enough, he can remake himself radically.

People Don't Change—While it is sometimes true that his behavior can be markedly modified, the fact remains that the man himself has not changed. Thus, in judging people and in establishing his expectations relative to them, the typical businessman is often using a set of assumptions and criteria which are not only unrealistic and naive, but are also scientifically unsound.

Third, many executives continue to believe that because a person is intelligent, in a test sense, and may be well educated, he is necessarily logical, orderly and rational in his thinking. Most accept the corollary assumption that people are effectively influenced by logic and reason.

These assumptions are not entirely true. Many persons who are brilliant in a test sense have so lost contact with reality that they must be confined in institutions.

Furthermore, in most instances, the chief role of logic is to justify or rationalize courses of action which have been already determined by emotional (and often quite irrational) needs and impulses.

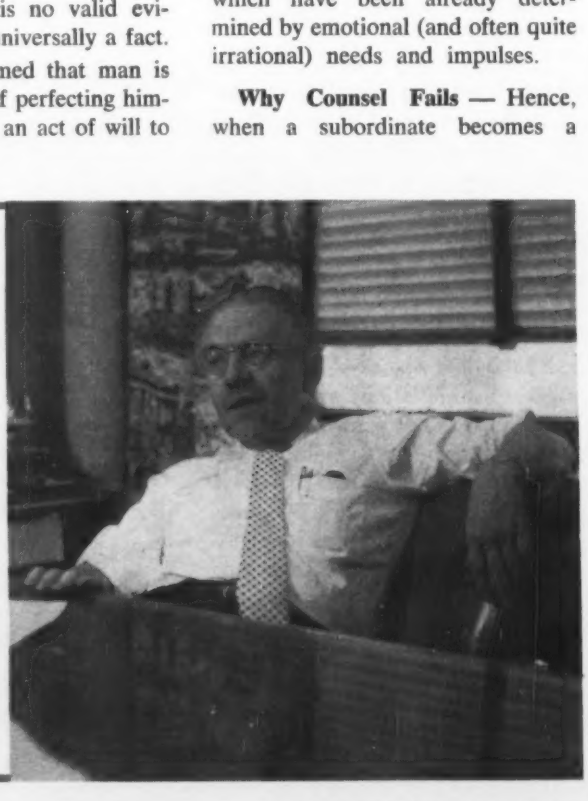
Why Counsel Fails — Hence, when a subordinate becomes a

No Stranger To Personnel Problems

Dr. Robert N. McMurry, right, the author of this new series, is a well-known industrial psychologist.

His first IRON AGE article, a provocative analysis of management weakness as a cause of labor unrest (Feb. 5, p. 51), brought the highest reader reaction of any article published this year.

He has made notable contributions in the fields of job evaluation, merit rating and preventive labor relations and is recognized as one of the pioneers in developing patterned interview procedures.



TROUBLE MAKER: The brilliant, technically-skilled malcontent can cause considerable dissatisfaction among fellow workers. He usually resents management's status.

problem, his superiors ordinarily patiently point out to him what he is doing wrong and why and he should do to correct his shortcomings. Then they sit back and expect him to thank them for putting him on the right track and to take remedial action.

All too often, he does neither. First, because he is in no sense thankful for their interference, and second, because he could not take the remedial action, even if he wished to, which he seldom does.

Human beings may best be described as creatures of impulse and habit. Both of these tendencies manifest themselves early in infancy and tend to persist or recur with only minor modification throughout life. Thus, the adult may be said to be the lengthened shadow of the infant.

Basic Needs—His needs are fundamentally those of the child, but at a more sophisticated level. At heart, he has many of the characteristics of the infant. He also experiences a pressing need for security, guidance, and nurturance by father and mother figures.

Unfortunately, the formative influences of the child's environment are not always entirely constructive. As a result, any one of a wide variety of maladjustments may show themselves in the adult.

It is from this group of the maladjusted that many of the problem employees come.

Normally, the veneer of culturally imposed restrictions keeps the individual in check. On a day-to-day basis, his aggressive, selfish and other animal impulses are reasonably well controlled.

However, if management is to understand its men's and women's behavior, especially that of its problem cases, and is to utilize them most effectively as employees, it must see them as they really are; not as theologians conceive them to be or as they would like to believe they are.

Facing the Facts—Management must, therefore, face the fact that most of its people are not inherently noble, self-sacrificing, industrious and dedicated to the welfare of the enterprise which employs them. The majority of their personnel derive little satisfaction from their work and many, for the most part, lead lives of quiet desperation and frustration.

It is hypocrisy to picture most employees, especially at the hourly-rated level, as happy, contented workers, deriving continuing pleasure and challenge from their jobs.

Instead, they are there because if they do not work somewhere, they will not eat nor will they be able to support their automobiles.

What Management Must Provide—Their primary needs in a work context are for security, certainty and structure. Most intolerable are ambiguity and uncertainty because they threaten their security. If management provides them with moderate (and where it doesn't, the union invariably steps in) security and certainty, together with enough job structuring to eliminate any ambiguity, the bulk of employees will be satisfied—perhaps not happy, but at least satisfied.

Under these conditions, few will become problems.

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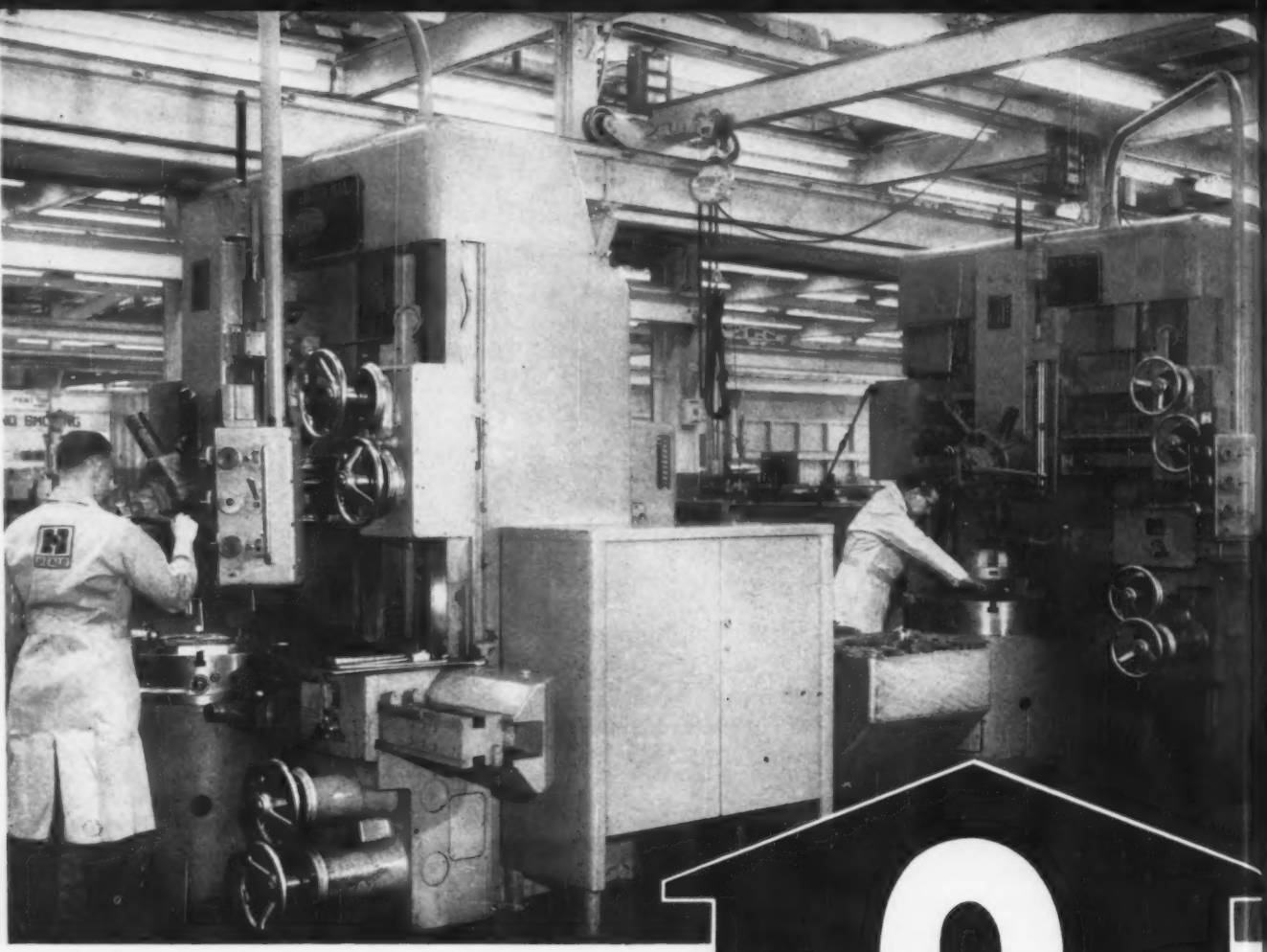

IT PAYS TO REPLACE . . .

A study of the production factors at The Heald Machine Company, Worcester, Mass., pioneer New England builders of precision machine tools, indicated that two Bullard Cut Master V.T.L.'s, Model 75, would produce as many parts, in any given period, as four Bullard V.T.L.'s of an earlier design.

when 2 do the work of four

In actual production, these additional advantages have been experienced:

- Greater flexibility for faster changeover and set up
- Ease of control — less operator fatigue
- Dependability and accuracy on holding size
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This all adds up to more parts at less cost per piece.

Perhaps an analysis, by a Bullard Sales Engineer, of your machining procedures will reveal "hidden savings" for you.

Why not ask him or write.

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Preview of 1960 New Car Models

Emphasis Is on Driver Comfort, Lighter Materials

Floor humps and seat positions will be improved. Trim will be less gaudy.

But for the most part, styling changes will be minor in the new cars.—By H. R. Neal.

▪ In less than two weeks the first of the automakers will show their 1960 models to the press. Cadillac leads off on August 17, followed by Oldsmobile the following day. By the end of September newsmen will have completed the annual tour through the auto empire's chrome-bright world of wheels.

Prospective purchasers will get their first opportunity to see Detroit's 1960 iron at the end of September. By the middle of October, in one of the tightest introduction schedules ever, they'll be able to see all of the new cars except Chrysler's Valiant. And a liberal application of overtime schedules will get that make into the market place before the end of the month.

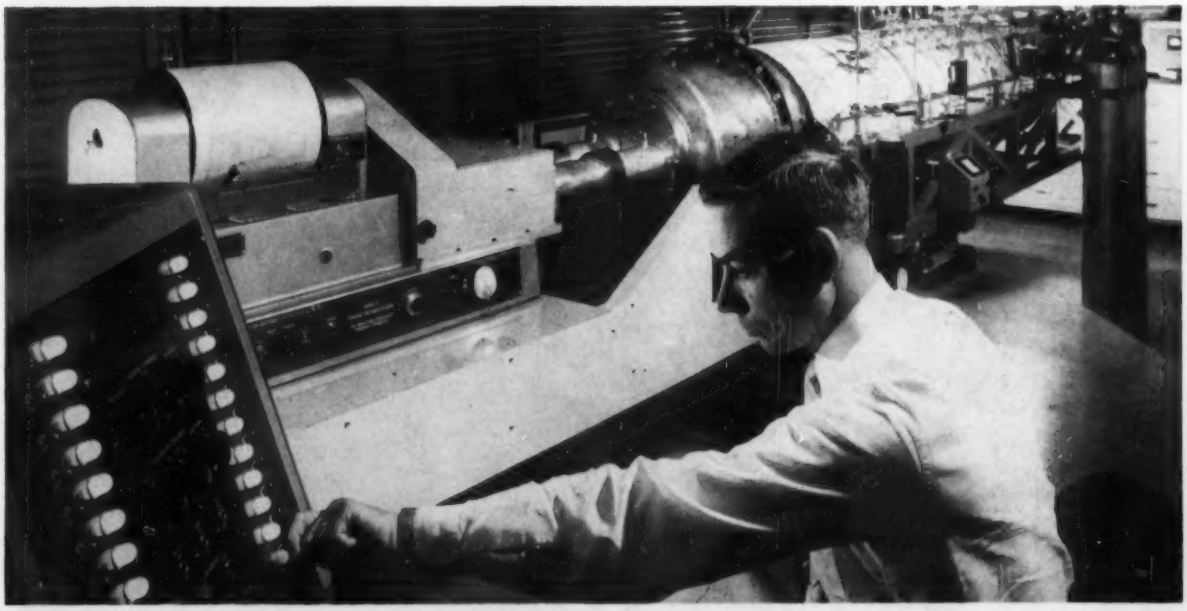
Center of Interest—Understandably, most of the attention will be focused on the new light cars to be offered for the first time this fall. But automakers haven't concentrated all of their efforts on the smaller cars. After spending a wad of money to bring out its 1959 models, automakers have again poured a considerable amount of money into revising the big cars for 1960.

Changes have been made in nearly all lines to raise driver and passengers to more nearly a sitting position again from this year's sports car type, semi-prone position. And the transmission hump and driveline tunnel, jutting up into the passenger compartment like a barrier reef, are on the wane.

Cadillac Styling—Cadillac is currently enjoying the best sales year in its 57 year history, but styling changes for 1960 models shouldn't hurt its sales appeal.

Tail fins will be more subdued

Smog Battle Goes on in the Laboratory



MAN AGAINST FUMES: The elusive chemistry of smog formation is sought by a technician using a long-path infrared cell at General Motors Research Laboratories, Warren, Mich. Various smog ingredients are irradiated with artificial sunlight in the cell to determine what photochemical reactions are involved.

and the twin torpedo taillights will be placed lower in the fender. Side panels are fairly deeply sculptured.

New Zinc Alloy Grilles—Oldsmobile is giving a more blade-like appearance to its rear fenders. The new grille is diecast of a zinc alloy. In line with GM's trend to conservative refinements, there will be less bright metal used for trim. A new Slim Line HydraMatic transmission aids in reducing the floor hump.

Pontiac, riding its "wide track" into a nip and tuck battle for third place in industry sales, is restyling its sheetmetal. Like Olds, it's switching to a zinc alloy, diecast grille and the Slim Line transmission. A new series name, the Ventura, will be introduced on the smaller 122 in. wheelbase.

Aluminum Makes Inroads — Buick's striking rear fender blades are being retained as part of a new rear end treatment, although slightly subdued. The 1960 models weigh a little less than the 1959's. Nearly 60 lb of iron and steel in the engine is replaced by slightly less than 30 lb of aluminum.

Chevrolet's gull wings have been clipped a bit and now start further to the rear, reducing the flare. In the front passenger compartment the transmission hump is 1¼ in. lower and 1½ in. narrower. The problem of loading the trunk is eased—the sill is 1½ in. lower.

Corvette styling remains unchanged, except for new colors. However, an aluminum head saves over 50 lb of weight on fuel injection engines. Aluminum clutch housings are new for both 3-speed and 4-speed standard transmissions.

Fords Will Be Bigger — Ford Motor Co., with both hot and cold selling cars in its garage, is giving the full treatment to the name line, revamping the others.

Ford is taking one last fling on the bigness kick — longer lower and wider. While redesigned completely on a new body shell, the flavor of 1959 models isn't lost. Wheelbase is 119 in., 1-in. longer than present models and the same as Chevy's. The car is 5 in. longer, 4 in. wider and 1 in. lower for 1960.

Aug. 1, 1959	123,155	21,733
July 25, 1959	130,339	26,677
Aug. 2, 1958	63,719	16,655
July 26, 1958	85,519	16,570
TO DATE 1959	3,844,494	771,225
TO DATE 1958	2,576,548	516,260

Less Sculpting—One phase of Mercury's styling evolution seems to have run its course and another could be in the making. The sculptured trough which emerged on rear fenders a few years back has disappeared, replaced by a hint of a fin. Mercury led the field in reducing humps and tunnels on 1959 models, so that's already taken care of.

Lincoln's classic lines remain virtually unchanged. The sculptured section around the front wheels, added for 1959, has been taken off again.

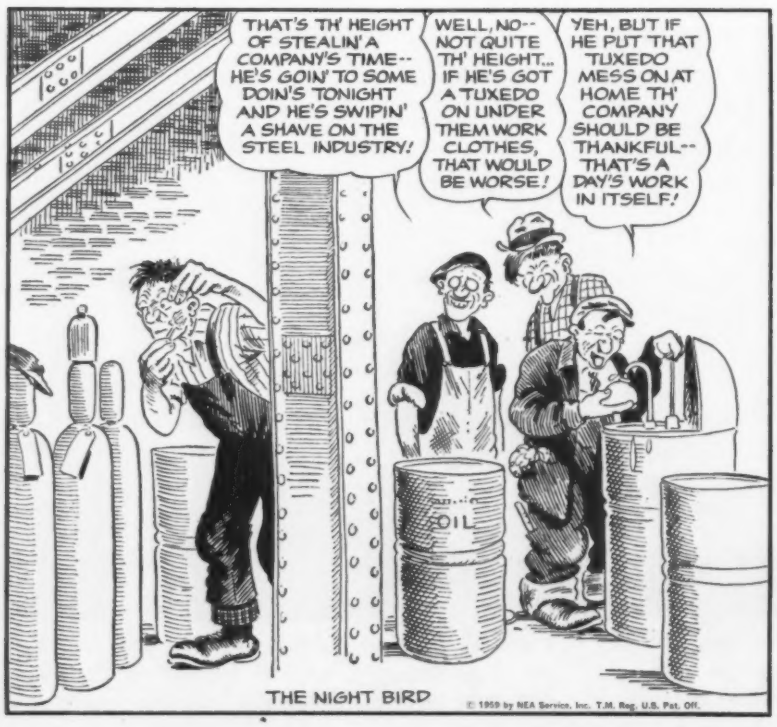
Chrysler Goes Unitized—Chrysler Corp. is making what is probably its biggest change in history. Everything but Imperial is switching to unitized construction — all new bodies and sheetmetal. And the present styling theme continues. After more than 20 years, there's finally a new in-line six-cylinder engine.

Plymouth retains its distinctive fins and is slightly longer than in 1959. Its new six-cylinder engine is canted 30° to the right in the engine compartment.

Dodge Dart Unveiling — Dodge is adding a new series—the Dart. Virtually a new car, it is slated to compete with Plymouth, Ford and Chevy. It has Plymouth's wheelbase of 118 in., but is several inches shorter overall. It also shares the company's new "six." But it's all Dodge.

De Soto survives the rash of rumors about its demise with only its fins subdued.

The Bull of the Woods


THAT'S TH' HEIGHT OF STEALIN' A COMPANY'S TIME-- HE'S GOIN' TO SOME DOIN'S TONIGHT AND HE'S SWIPIN' A SHAVE ON THE STEEL INDUSTRY!
WELL, NO-- NOT QUITE TH' HEIGHT... IF HE'S GOT A TUXEDO ON UNDER THEM WORK CLOTHES, THAT WOULD BE WORSE!
YEH, BUT IF HE PUT THAT TUXEDO MESS ON AT HOME TH' COMPANY SHOULD BE THANKFUL-- THAT'S A DAY'S WORK IN ITSELF!
OIL
THE NIGHT BIRD
© 1959 by NEA Service, Inc. T.M. Reg. U.S. Pat. Off.

New "washing machine" makes CLEAN stainless steel

More often than not, titanium-bearing stainless can hike your fabrication costs . . . due to subsurface stringers or banding that cause excessive scrapping of parts. At Eastern, however, these harmful inclusions come out in the "wash."

Eastern's exclusive slag wash melting process produces the *cleanest* titanium-bearing stainless you can buy . . . exceptionally free from non-metallic contaminants . . . and at *no extra cost.* Eastern's new high-capacity slag furnace will meet industry's growing demand for such titanium-bearing steels as 321SW, 19-9DL, A-286, 19-9DX. Which do *you* need—and how fast?

EASTERN STAINLESS STEEL

Baltimore 3, Maryland, U. S. A.

CINCINNATI

Look!

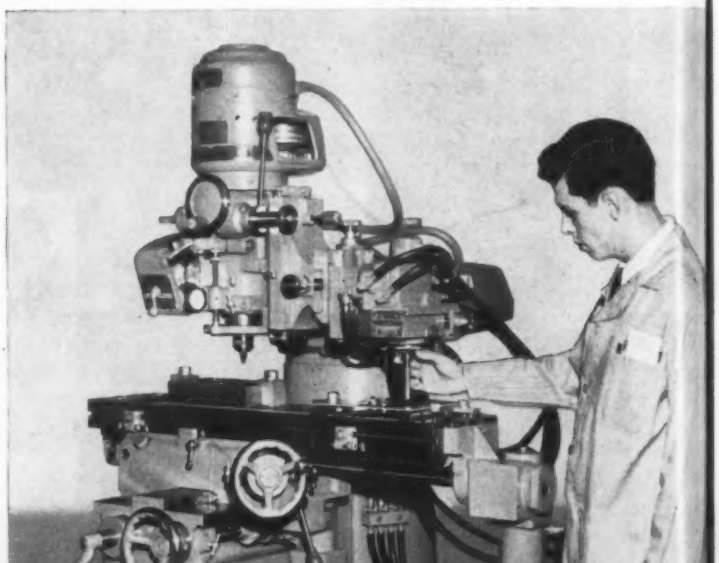
ONE HAND GUIDES 3-DIMENSIONAL MILLING

on CINCINNATI Contourmaster

Ask any tool and die maker. Manual control still is highly desirable for roughing out die and mold cavities. There are several ways to perform this type of operation, but the quickest and easiest is on a CINCINNATI No. 1C Contourmaster Milling Machine with its single manual control . . . the 3D hand guided hydraulic tracing unit. This amazingly responsive mechanism directs the table to move right or left; the saddle to traverse in or out; and the cutter spindle to go up or down. All these feed movements are controlled through simple deflection of the tracing finger, as shown in the illustration at right. For conventional toolroom milling, the tracing unit can be quickly disengaged and feed control handwheels employed.

Check into the many advantages of CINCINNATI Contourmasters for your tool and die shop. Complete information on Style 1C will be found in catalog No. M-2008; Styles 1A and 1B, catalog No. M-1919-2.

The Cincinnati Milling Machine Co.
Cincinnati 9, Ohio



THREE-DIMENSIONAL MILLING. Longitudinal, cross and vertical (quill) feed movements are activated through deflection of the tracing finger on the Hand Guided Hydraulic Tracing Unit, a standard feature of CINCINNATI No. 1C Contourmaster Milling Machines. 22" table traverse; 10" cross traverse; 42" x 10" table working surface. Catalog No. M-2008.

PLASTIC SAW HANDLE MOLD, a typical job for the 3D feature-advantage of CINCINNATI No. 1C Contourmaster. Note the variety of curves in the long outline of the master template (right), and the increase in depth from front to back of the handle.

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Showdown Near in Labor Reform

Senate and House Are Touchy Over "Inept" Bills

Congress is unlikely to put off action on labor reform legislation much longer.

A battle looms over amendments to weak bills approved in committee.—By G. H. Baker.

▪ Labor reform, the most angry issue before the Congress this year, is fast moving toward a showdown. Leading House Democrats, touchy over charges they've been soft on labor, vow they'll force some sort of reform measure through the House within the next few weeks.

House Speaker Sam Rayburn declares passage of a labor reform bill is essential. True, President Eisenhower will certainly veto any bill he regards as lacking in capacity to clean up the existing mess.

But Democratic leaders are anxious to let the voters know they voted for some kind of reason—even mild or inept reform—so that they can claim they tried to bring about labor reform but were thwarted by Mr. Eisenhower.

The Senate already has approved a weak reform bill. The House labor committee has approved a still weaker bill, but union leaders denounce it as bitterly as though it were intended to outlaw the U. S. labor movement. What these leaders are quitely maneuvering for, of course, is enactment of a mild reform law they can live with.

When the House bill is brought up for debate, it will be wide open for amendment on the House floor. Republicans are preparing amendments that will convert the present bill into a more meaningful reform measure. But unless they are joined in the final voting by a substantial number of southern Democrats, their efforts will be doomed. The existing House division is 282 Democrats, 153 Republicans.

Here's why Ike and most Republicans brand the pending House bill as "inept":

1. It offers no workable restriction on secondary boycotts and on blackmail picketing.
2. It presents no guarantees of a secret ballot in union elections.
3. It is silent on political activity by unions.
4. It does not offer states any real authority for dealing with labor problems.
5. Nothing is said about making labor unions subject to the anti-trust laws.

House labor committee is definitely a pro-labor committee. Partisan lineup is 20 Democrats, 10 Republicans.

Aid for Coal

Congress is going to provide government help for the sagging coal-mining industry.

The Senate and House have both passed legislation to create a new coal research and development commission "to encourage and stimulate the production and conservation of coal" through research and development.

Short Range Goal — The new commission would have a first-year appropriation of $2 million. Its primary function would be to develop shore range methods of aiding the coal industry to supplement the long-range research programs of the Bureau of Mines.

The House version of the measure would set up an independent agency. The Senate, to meet objections of the Interior Department and the Budget Bureau, would create the new commission within the Interior Department. These and some minor differences will have to be reconciled before the measure goes to the White House.

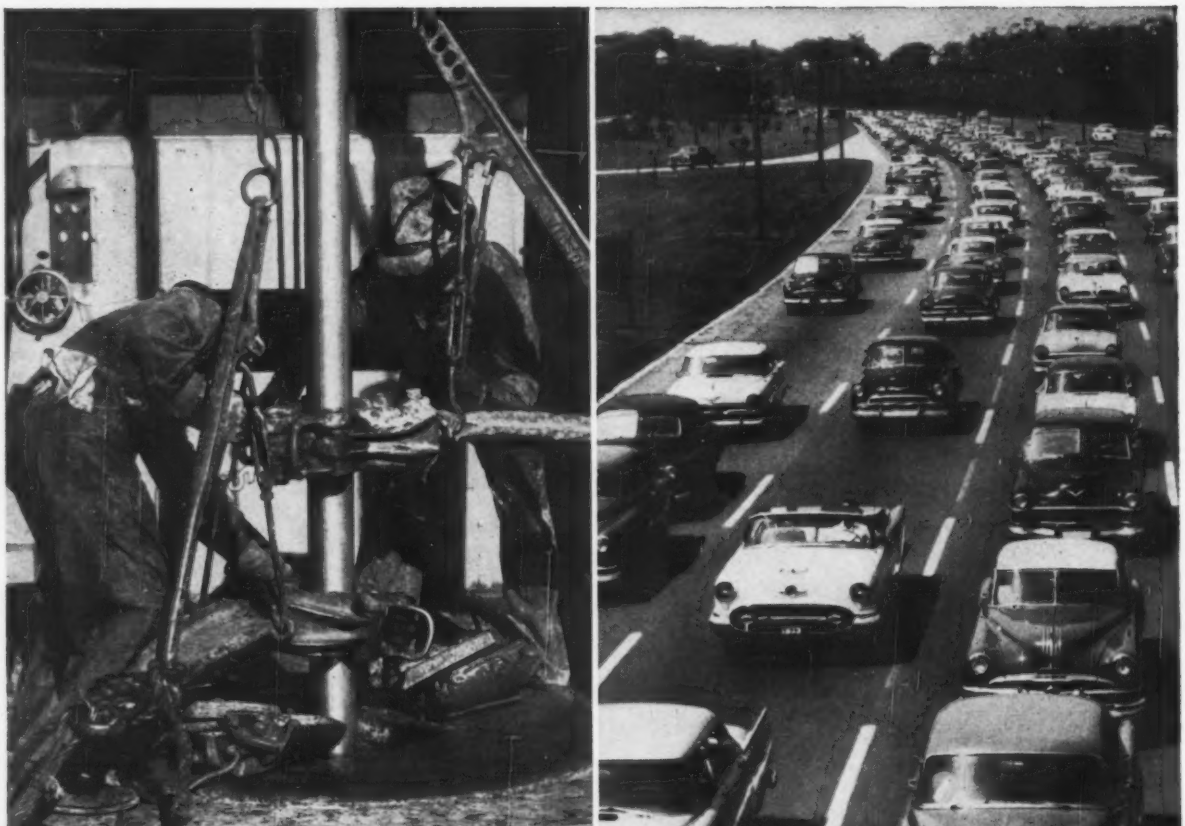
Talk Longer on Your Nickel

▪ Long distance telephone calls are going to cost less in the future.

The Federal Communications Commission has ordered the Bell Telephone System to cut its rates on phone calls of over 300 miles by a total of about $50 million a year. The cuts were ordered to bring the rate of return on such calls to the normal 6½ pct generally allowed utilities.

Company Protests — Spokesmen for the telephone utility are protesting the reductions. They complain that the cuts result from economies achieved through such devices as direct long-distance dialing systems. The firm is being penalized "because it has good research and good management," a spokesman charges.

Exact new rates on long-distance calls will be announced soon, and will go into effect in mid-September.



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Plane Builders Spread Wings

They're Branching Out Into New Industrial Fields

Diversification fever is catching on with giant aircraft and missile manufacturers.

Builders going into everything from computers to reactors and machine tools.—By R. R. Kay

▪ There's a not-so-quiet revolution going on in the aircraft-missile plants on the coast.

The major companies are busy adding new industrial products to their line. The trend to diversify, first reported in The IRON AGE Feb. 5, p. 61, gathers steam every day.

The Details—Here's an up-to-date rundown:

Lockheed moved in electronics, shipbuilding, monorails, heavy construction, and nuclear products.

Boeing follows the trend. It's pushing its small gas turbine for passenger car and truck use.

Computers to Reactors—North American makes metal curtain-wall panels, diamond wheels, numerical control systems, electronic computers, data processing equipment, and atomic reactors for power plants.

Douglas Aircraft's Aircomb, a paper honeycomb material, is doing well. Production, up 75 pct over last year, points to expansion of factory space.

Convair is hot and heavy after business for its dynapak, a new machine tool. It can forge, extrude, and form a wide variety of high-strength metals and alloys. Convair is also exploring the market for test instruments.

To Communications — Northrup made a strong move in the long-range communications systems field. Its purchase of Page Communication Engineers, Inc., puts the company into an entirely new field. Another move to diversify: Formation of Edison-Page, S.P.A., jointly owned by Northrup and Society Edison of Milan.

Northrup also has a monorail to sell. It's making pitches right along for this business.

Electronics Growth Area

What makes the West Coast such a hot growth area for electronics? Here are some answers. They may help your sales planning.

The Defense Dept.'s highest priority weapons projects are largely centered in the farwest.

Los Angeles is headquarters for the Air Force Ballistic Missile Div. And the only operational missile training facility is a few hours' drive away.

Main research center for the civilian space exploration project is on the coast.

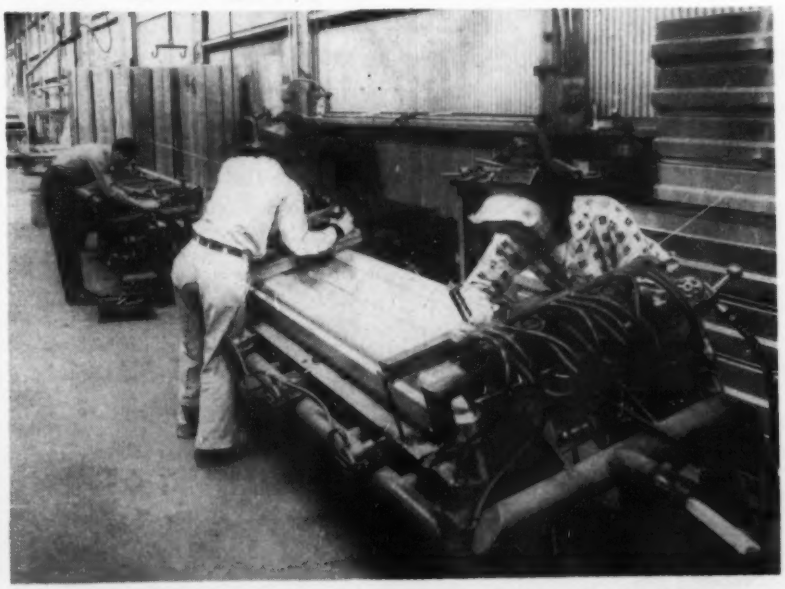
About 50 pct of planemaking is there. Also, half of the top subcontractors on ballistic missile production.

Military test ranges are ample.

And there's a very big pool of top physicists and electronic scientists.

Weather, of course, plays a big hand. Dry desert climate is good for both making and testing electronic equipment.

Keeping a Tight Grip on the Falcon



TACK WELDING: Clamping jigs are used to hold ends of USAF Falcon missile container during tack welding of longitudinal sections.

It takes creative research and an awareness of customer demands to turn out good abrasives. Anything less won't solve the problem.

High quality, efficient shot and grit, applied with good equipment, have a dollars and cents factor that any good ring-wise salesman and cost accountant can appreciate.

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New Order Rush Gathers Speed

June Was Best Month for Builders in Two Years

There's every indication that the pickup in business will continue in second half.

Most of the gain is domestic but foreign buyers show signs of life.—By E. J. Egan, Jr.

▪ A welcome wave of new business rolled in on U. S. machine tool builders in June, making it the big-best new order month the industry has seen in more than two years.

Net new orders for all types of metal cutting and forming machines totaled an estimated $67.3 million last month. This was almost $20 million above the May figure. The June rush pushed first-half bookings to slightly more than $307 million, for a solid 70-pct gain over the like 1958 period.

Trend to Continue — Builders view a recovery of this magnitude as a healthy sign for the future. Judging from "presently known plans and conditions," Ludlow King, executive vice president of the National Machine Tool Builders' Assn., estimates that "both new orders and shipments in the last half of 1959 will exceed those of the first half."

First-half shipments this year totaled $252 million in contrast with the $307-million figure racked up in the January-June period last year. But in the final six months of 1958, when the pinch was really on, shipments came to only $213 million, well below current rates.

Home and Abroad — Domestic customers are accounting for most of the industry's current revival but foreign buyers aren't as far out of the picture as you might think. Net new orders from outside the country added up to a respectable $5.5 million in June, bringing the half-year total for this source of new business to a shade over $31 million.

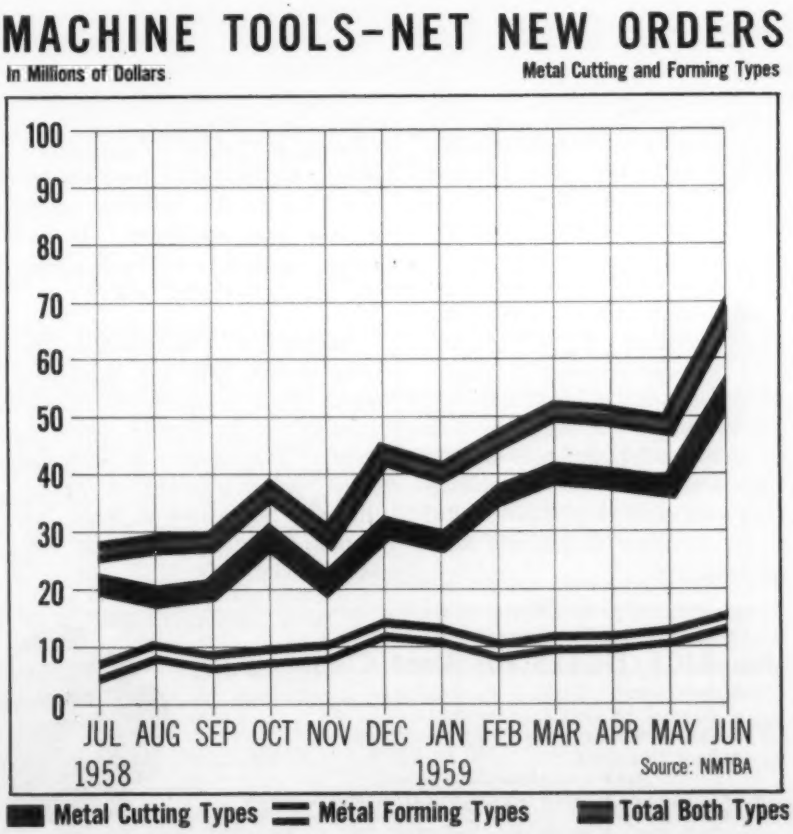
Broaching Does a Job

Modern broaching accounts for an unusual reduction in machining time on two critical operations Raytheon Mfg. Co. performs on gimbal rings for the Hawk missile.

In the first operation, a Lapointe 30-hp horizontal broaching machine simultaneously finishes 10 surfaces on the ring. This achieves a 3600-pct time reduction over the former practice of using four separate vertical milling operations. On a time basis, the broaching cycle (including loading) is only 2.5 minutes. Vertical milling formerly took 90-minutes.

Less Time, Same Finish — The second broaching operation shows a 2400 pct time improvement over the previous practice of milling an 8-in. inside shelf and an opposed flat on the gimbal ring. Again, a broaching cycle of only 2.5 minutes achieves the same tolerances and surface finish that milling accomplished in 60 minutes.

In addition, broaching is said to eliminate rejects.



INDUSTRIAL BRIEFS

In Orbit—An astronuclear lab for the development of nuclear energy for outer space has been formed by Westinghouse Electric Corp. Located in Pittsburgh, it will be part of a new Westinghouse atomic power division that also will include existing activities of the company in developing commercial applications of atomic energy for electric power generation.

Ajax at Ajax — Ajax Magnethermic Corp. has formed a Canadian subsidiary, Ajax Magnethermic Canada, Ltd. at Ajax, Ontario. The company will market the products of the three divisions of the U. S. parent company in Canada. Plans are underway to manufacture billet heaters, melting equipment and heat treating units in Canada, with technical assistance from the parent U. S. company's three divisions.

Caribbean Honeymoon—Administrative headquarters for Reynolds International, Inc., recently incorporated overseas manufacturing and sales arm of the domestic aluminum producer, Reynolds Metals Co., will be established at Hamilton, Bermuda. J. Louis Reynolds, chairman and chief executive officer of Reynolds International made the announcement.

Magnesium Alloys—Magnesium Alloy Products Co., Compton, Calif., has been licensed by Magnesium Elektron Ltd., Manchester, England, to produce alloys on which the British company holds patents. These include the new magnesium-silver-rare earth alloy "MSR" billed as the strongest magnesium alloy yet developed.

Beryllium Progress — Thermal Reduction Corp., Philadelphia, one of the largest processors of beryllium copper scrap in the country, announces that it has developed a new, more efficient process for reclaiming the beryllium from scrap.

More Glitter—American Smelting and Refining Co. is now turning out a super purity gold for electronic uses, at its Central Research Labs, Plainfield, N. J. The new product is 99.999 pct pure, costs $50 per troy oz. Commercially pure gold is 99.98 pct pure, costs $35 per oz.

Economical Tube—The Board of Directors of Cerro de Pasco Corp. has approved a two-year modernization program for its Lewin-Mathes Div., tube makers. The principal aims are to effect operating economies in the range of 20 pct to 25 pct, and to expand the Lewin-Mathes line in thin-walled industrial tubing.

Copper-on-Steel Succeeds — National-Standard Co., Niles, Mich., has shipped the five millionth lb of Copperply—a special copper coated steel wire—since its introduction to the trade 28 months ago.

In High Gear — Westinghouse's gearing div. has been cited by Michigan Tool Co. for "effective use of modern gear equipment." It was among the first to cold roll splines and threads for gear motors.

Automation Everywhere — The Ohio Electric Mfg. Co. is offering copies of a 16-page survey, "Mechanization in the Ferrous Scrap Industry." The survey was conducted under the sponsorship of the Institute of Scrap Iron & Steel, Inc. Copies from 5400 Dunham Rd., Maple Heights, O.

Chase-Kaiser-Houston — Kaiser Aluminum round rod in screw machine alloys and specialties including extrusions are now available from the Houston warehouse of Chase Brass & Copper Co., Inc. Stocking of aluminum products in Houston follows the appointment of Chase as a nation-wide distributor of a variety of Kaiser Aluminum products.

Cash and Carry—The Navy has awarded the Reaction Motors Div., Thiokol Chemical Corp. a $3.5 million contract for the production of the Guardian II pre-packaged rocket engine. The engines will be produced at the division's new facilities at Bristol, Pa.

Zinc Probe — Rensselaer Polytechnic Institute, Troy, N. Y., will attempt to develop improved wrought zinc alloys via powder metallurgy as the latest step in the expanded American Zinc Institute research program. The project, under the wing of the Institute's Dr. Schrade F. Radtke, will be directed by Rensselaer's Dr. F. V. Lenel.

Lighter Landing Craft—The U. S. Army has tested its first all-aluminum amphibious craft, the LARC-5, which stands for: "Lighter, amphibious, resupply, cargo, five-ton capacity." It was built by the Ingersoll Kalamazoo Div. of Borg-Warner Corp. under a U. S. Army Transportation Corps contract.

Cross in Germany — The Cross Co., Detroit, is erecting another new plant for the manufacture of special machine tools in Europe. The European plant, to be located in Germany, is being erected for increased development in business, hoping to develop two-way trade between European and American plants.

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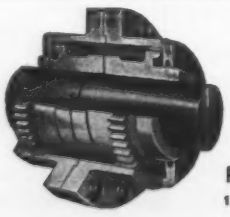

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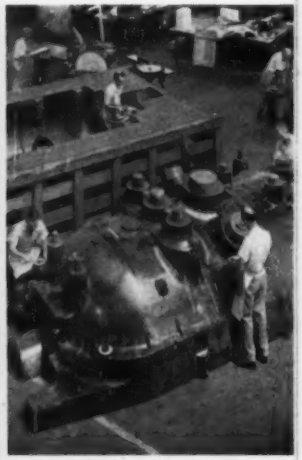
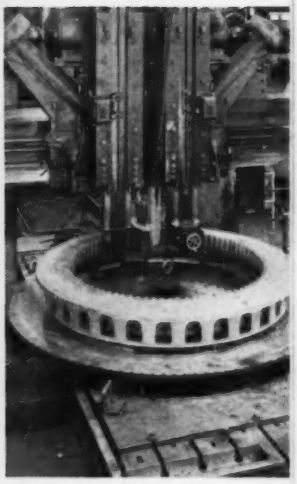
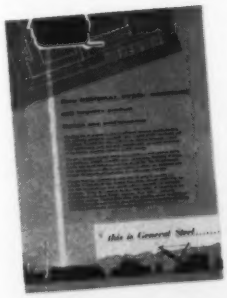




PRODUCTION FACILITIES . . . COMPLETE AND MODERN



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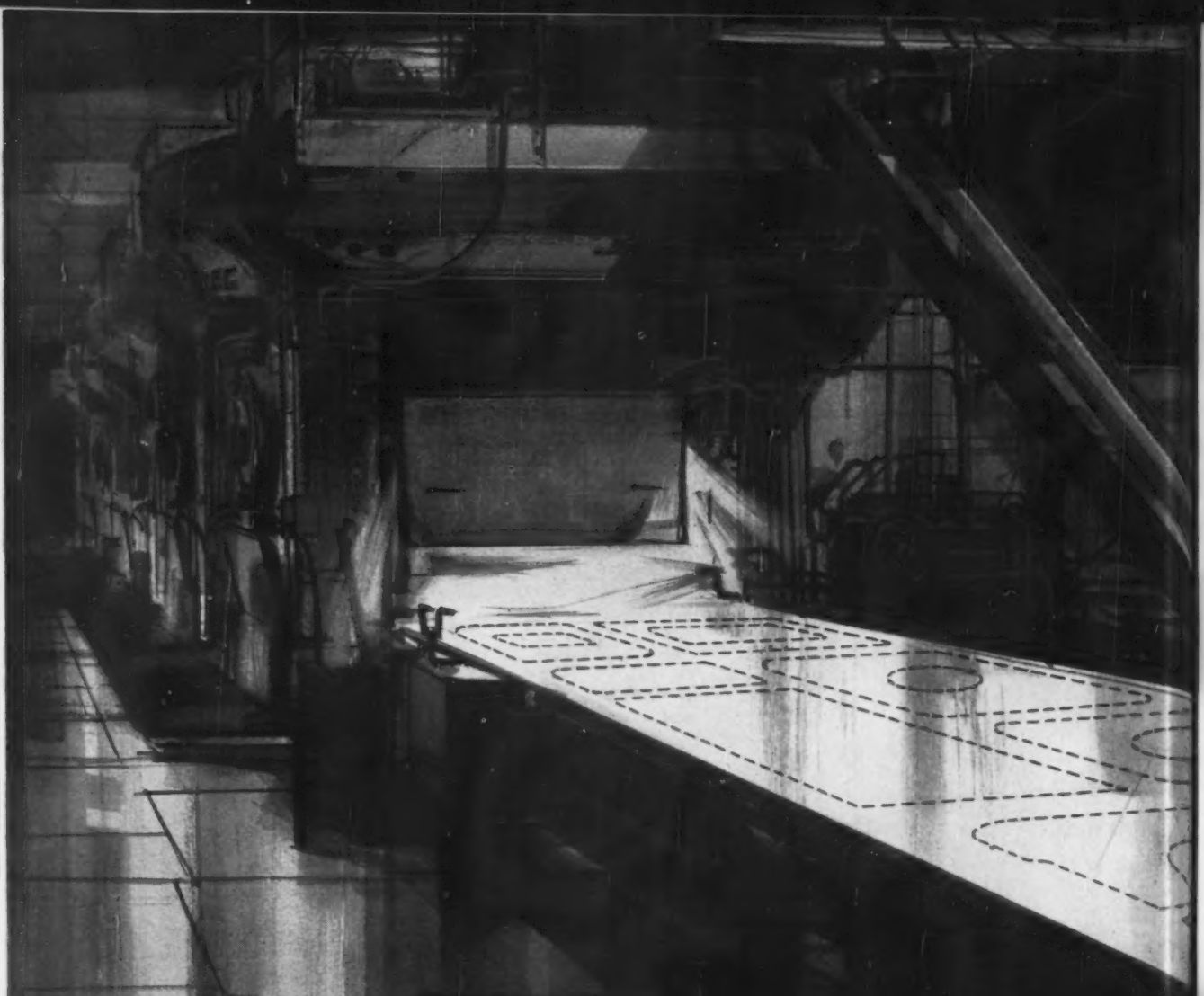

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William Rodgers, named senior vice president, Blaw-Knox Co., Pittsburgh.

Buell Engineering Co., Inc.—**Hugh Mullen,** appointed vice president, operations.

National Research Corp.—**J. I. Olson, Jr.,** named treasurer.

Goodyear Tire & Rubber Co.—**J. A. Lucas,** promoted to asst. manager, Engineered Products Dept.

Surface Combustion Corp.—**A. L. Patmore,** promoted to patent counsel.

Standard Screw Co.—**C. A. Mesler,** appointed supervisor, bolt sales.

Reynolds Metals Co., Light Metals Manufacturing Div.—**W. K. A. Ferguson,** appointed general manager.

The Carpenter Steel Co.—**E. D. Hinkel, Jr.,** appointed asst. sales metallurgist.

The Dalton Foundries, Inc.—**D. A. Dalton,** elected vice president, foundry manufacturing and **J. J. Shellabarger,** elected vice president, industrial sales.

International Business Machines Corp., Federal Systems Div.—**K. N. Davis, Jr.,** appointed controller.

Tubular Rivet & Stud Co.—**E. W. Dockendorff,** appointed general sales manager; **V. M. Miles,** named Western district sales manager; **Paul Fitzpatrick** and **E. J. Huebner,** appointed sales engineers.

The Yale & Towne Mfg. Co., Yale Materials Handling Div.—**J. J. Curry,** named Midwest regional sales manager.

General Electric Co.—**G. B. Hamilton, Jr.,** appointed manager, market development, heaters and devices, Industrial Heating Dept., Shelbyville, Ind.

Foote Mineral Co.—**J. D. Clark,** named sales manager, Eastern region and **D. S. Collins,** sales manager, Southern region.

T. R. Thoren, appointed vice president, engineering, Pesco Products Div., Borg-Warner Corp., Bedford, O.

The Oliver Corp.—**F. J. Pryatel,** appointed director, overseas manufacturing operations.

Chase Brass & Copper Co.—**Vincent Meyer,** appointed district manager, Cincinnati sales office and warehouse.

American Smelting & Refining Co.—**Charles Earl,** named manager, copper sales; **W. B. Clancy,** becomes manager, lead sales and **R. L.**

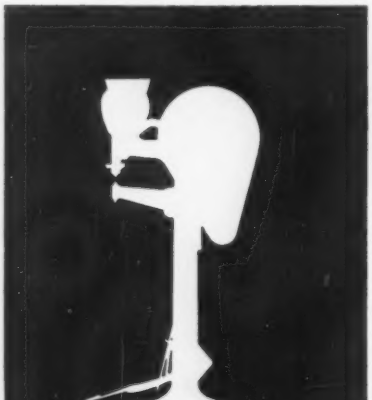
(Continued on P. 68)

P. C. Kjelstrom, appointed sales manager, Mechanical Press Div., Verson Allsteel Press Co., Chicago.

C. J. Warmac, appointed sales manager, Hydraulic Div., Verson Allsteel Press Co., Chicago.

W. C. Johnson, appointed asst. vice president, administration, Verson Allsteel Press Co., Chicago.

COST-CUTTING PRODUCTION TEAM



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(Continued from P. 67)

Wilcox, manager zinc and silver sales, General Sales Dept.

J. H. Williams & Co.—**H. F. Gould,** promoted to asst. manager, forgings sales.

The H. M. Harper Co.—**Edward Raack,** appointed controller.

R. O. Wynn, appointed vice president, engineering and research, W-K-M Div. of ACF Industries, Inc.

Columbus Coated Fabrics Corp.—**Norbert Frosch,** appointed manager, industrial styling.

Robertshaw-Fulton Controls Co., International Div.—**J. E. Farrand,** appointed general manager.

Lebanon Steel Foundry—**W. H. Flynn,** appointed general sales manager.

H. C. Tooley, appointed vice president, manufacturing, W-K-M Div. of ACF Industries, Inc.

J. H. W. Conklin, named general sales manager, Pratt & Whitney Co., Inc., West Hartford, Conn.

Bethlehem Steel Co., Pacific Coast Div.—**W. B. Jameson,** appointed manager of works, Torrance, Calif. fabricating works.

Phoenix Manufacturing Co., Fabricated Rebar Div. — **Harvey McCoy,** appointed chief estimator, office and engineering.

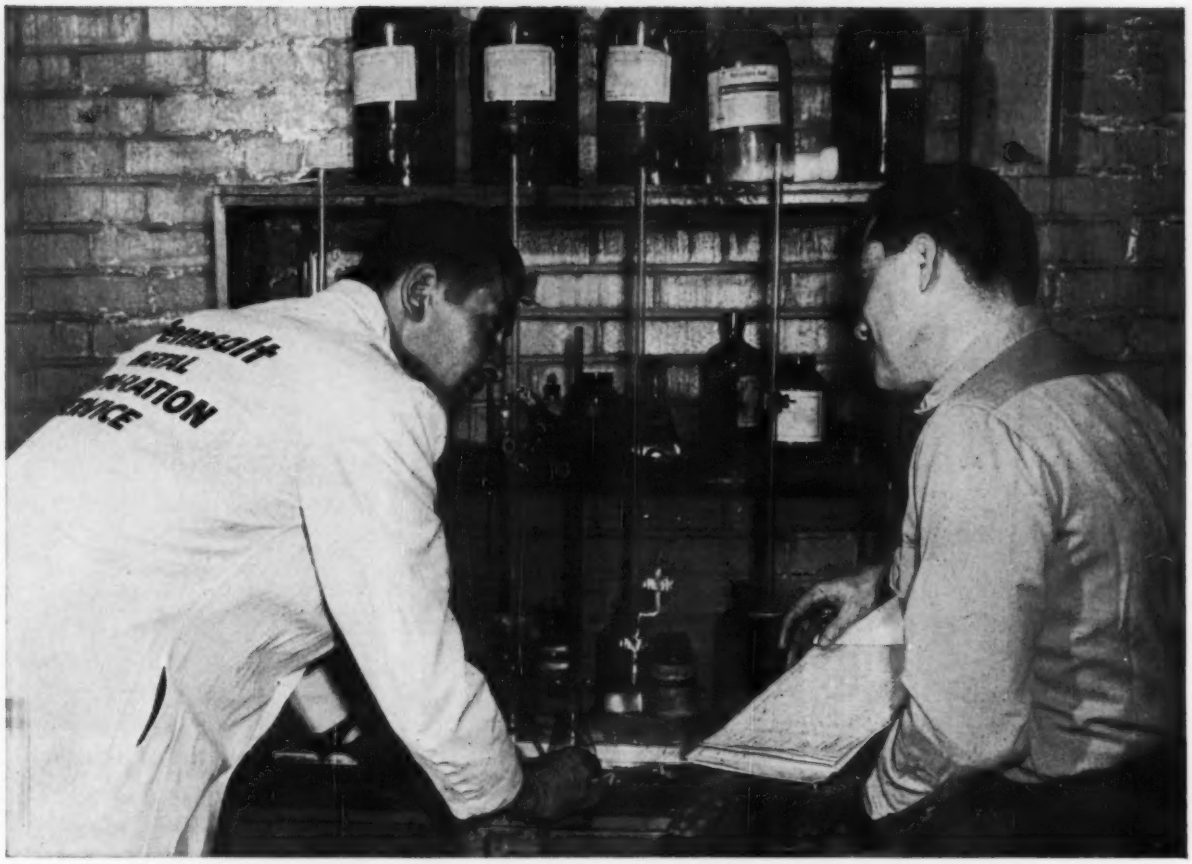
The Risdon Mfg. Co.—**A. C. E. Peasco,** appointed industrial sales manager.

Bartlett Richards, appointed vice president and director, planning, Acme Steel Co.

National Can Corp., Atlantic Div.—**Peter Zack,** appointed manager manufacturing.

The New York Air Brake Co., Hydreco Div.—**R. A. Jentsch,** ap-

(Continued on P. 70)



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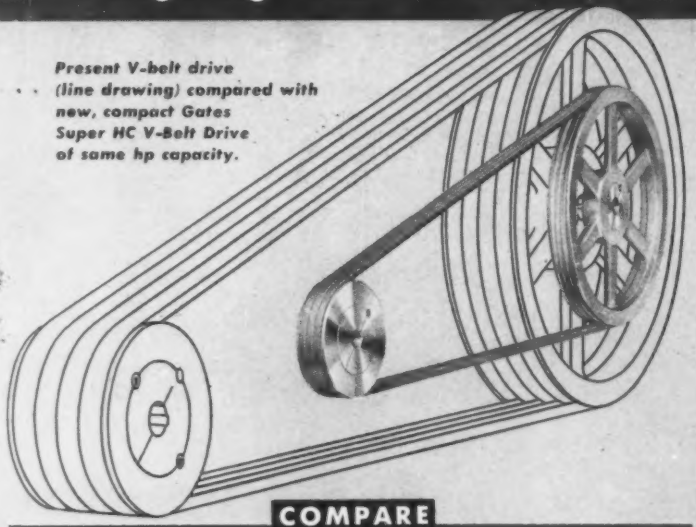
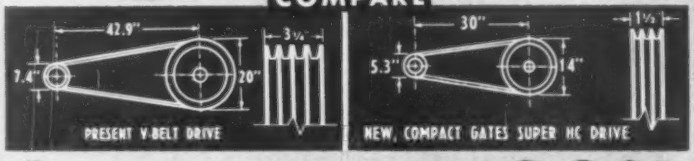


Present V-belt drive (line drawing) compared with new, compact Gates Super HC V-Belt Drive of same hp capacity.



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"The Modern Way to Design Multiple V-Belt Drives" is an informative handbook on the Super HC Drive, available from your nearby Gates Distributor listed in the Yellow Pages of your phone book.

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Gates Rubber of Canada Ltd., Brantford, Ont.
World's Largest Maker of V-Belts

TPA 439

Gates SUPER HC V-BELT Drives

(Continued from P. 68)

pointed manager, manufacturing; **J. R. Fehrenbach,** appointed sales engineer, industrial hydraulic equipment.

Towsend Co. — **R. W. Lehner,** named sales manager, Central Div. and **A. W. Livorine,** named Detroit sales representative.

E. P. Boyer, elected vice president, production, John A. Roebling's Sons Corp.

ACF Industries, Inc. — **P. R. Ellis,** appointed manager, South Albuquerque Works.

L. T. Willison, appointed director, Trade Relations, Jones & Laughlin Steel Corp.

Edgewater Steel Co. — **R. M. Heyl,** becomes general manager; **P. J. Nicholas,** becomes director, manufacturing control; **L. D. Dunlap,** becomes superintendent, manu-

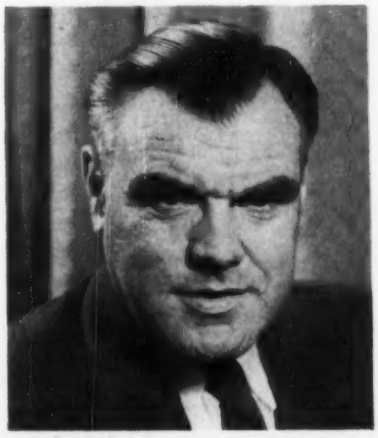
(Continued on P. 71)

(Continued from P. 70)

facturing; **T. C. Tiernan,** becomes asst. superintendent, manufacturing; **R. T. McElhose,** becomes manager, quality control and **C. C. Gerding,** becomes asst. chief engineer.

Miniature Precision Bearings, Inc.—**W. M. Scranton,** elected a member of the board of directors.

S. M. Wilson, III, appointed asst. manager, sheet mill products, Jones & Laughlin Steel Corp.



A. Vetter, named manager, overseas operations, The Cross Co., Detroit.

General Motors Corp., Harrison Radiator Div.—**C. V. Hawk,** named divisional director of reliability; **R. F. Caughill,** named asst. chief engineer.

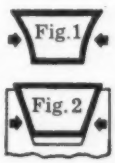
Sperry Products, Inc. — **T. W. McFarlan,** named manager, Eastern district, New York; **R. H. Frank,** Central district, Pittsburgh;

(Continued on P. 72)

Improved Gates Vulco Rope gives you 2 important advantages

1. 40% higher hp rating at no increase in price: This important cost-saving advance is the result of Specialized Research in the world's largest belt-testing laboratories at Gates. **As replacements on standard drives these V-belts with 40% more load-carrying ability give longer service life... reduce down-time, cut belt replacement costs.**

2. Concave Sides (U. S. Pat. 1813698): The sides of Gates Belts are concave (Fig. 1). When the belt is bent around the sheave, the concave sides fill out—become straight—for full, uniform contact with the sides of the sheave groove (Fig. 2). Uniform contact insures maximum pulling power...even distribution of wear...longer life.



Available in all sizes from your nearby Gates V-Belt Distributor listed in the Yellow Pages of your phone book.

When designing new drives
use Gates new Super HC V-Belts and Sheaves.
See opposite page.

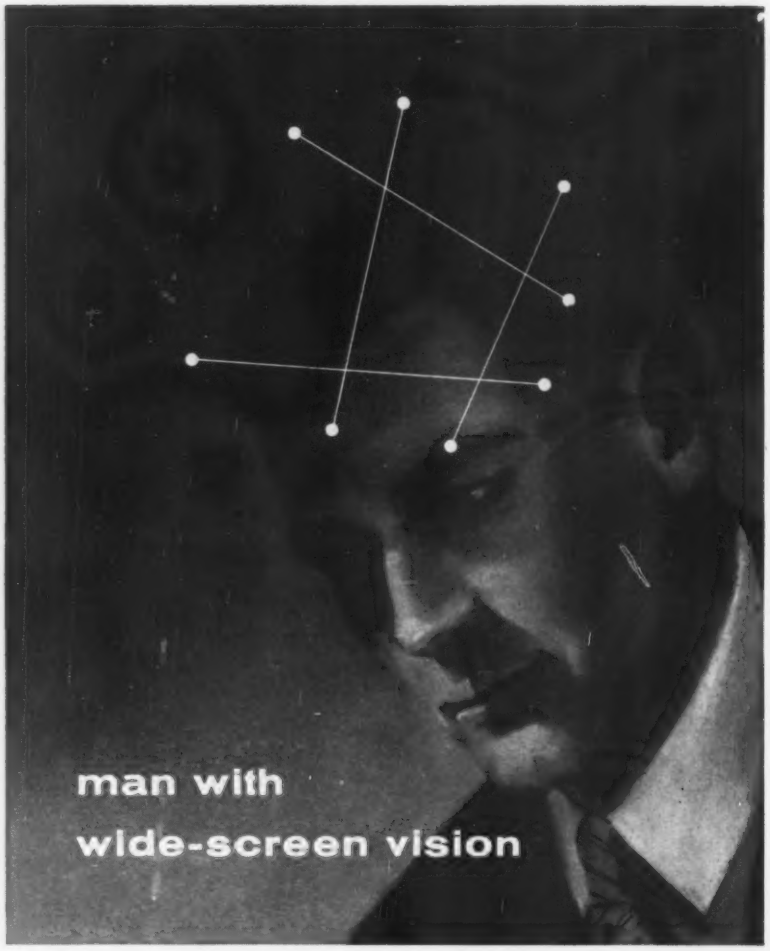
The Gates Rubber Co., Denver, Colorado
Gates Rubber of Canada Ltd., Brantford, Ont.

World's Largest Maker of V-Belts

Gates

TPA 432

Gates Hi-Power VULCO ROPE V-Belts



"The Man from Logan" has had years of vital personal experience in solving conveyor problems for busy plants like yours. So when he turns down the house lights, so to speak, and gives your problem the first screening, he sees it real and sees it whole.

This wide-screen vision is your ultimate assurance of the one best custom engineered conveyor system at the lowest feasible cost. Behind it, of course, is a solid academic engineering background and the special training and equipment to focus two generations of Logan experience directly on your job. Through "The Man from Logan" you benefit from a progressive research and development staff and an eminently qualified home-office engineering force, as well.

He sees your system through from design and specifications to smooth operation. The man and the company—there is no better source for your conveyor. Write or phone for a visit from "The Man from Logan."

Logan Conveyors

LOGAN CO., 545 CABEL ST., LOUISVILLE 6, KY.

(Continued from P. 71)

J. M. Dickey, manager, Midwest district, St. Louis; and **C. B. Haugh,** named Western district manager, Los Angeles.

General Electric Co., Apparatus Sales Div. — **D. A. Yates,** appointed manager, sales planning, industrial commercial section.

F. A. Brinker, appointed general manager, Western Div., Vanadium Corp. of America.

G. C. Novotny, named St. Louis district manager, Kaiser Aluminum & Chemical Sales, Inc.

Vulcan Materials Co. — **H. H. White,** appointed director, blasting practices and explosives research.

U. S. Steel Corp., Tennessee Coal & Iron Div. — **L. E. Clark,** appointed chief electrical engineer.

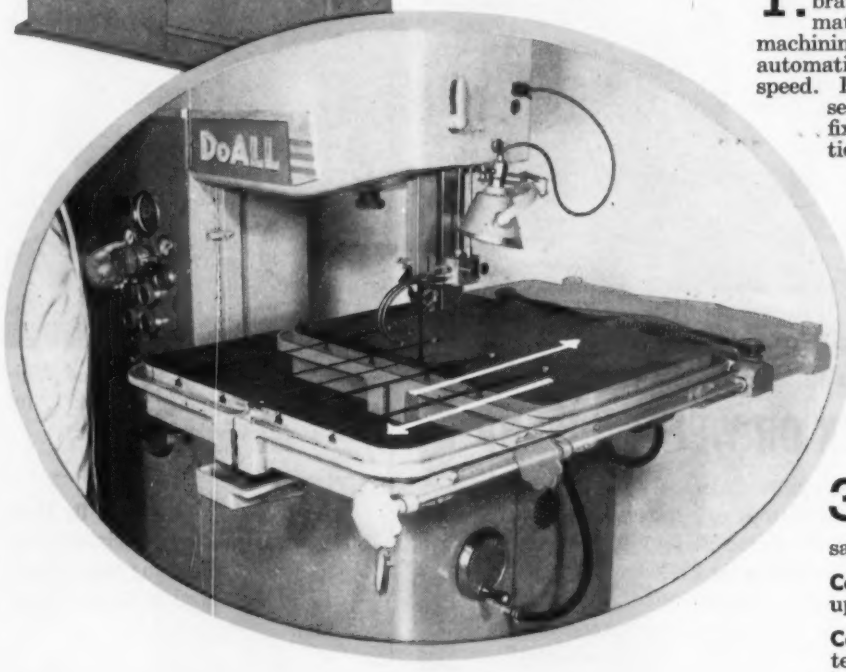
Republic Steel Corp., Union Drawn Steel Div.—**M. H. Creter,** appointed superintendent, industrial

(Continued on P. 74)

RE-EVALUATE your BAND SAWING

SEE Contour-matic® MACHINES

Model 26-3
One of a complete series of Contour-matics



1. **New Power Work Table** with calibrated work fixture on the Contour-matic removes the labor from band machining. Smooth-operating controls automatically coordinate feed and tool speed. Result: band sawing becomes semiautomatic with little or no fixturing for toolroom or production runs.

2. **New Cutting Tool** is the high-speed steel Demon* saw band. Its phenomenal properties permit performance that is 30 times longer than ordinary carbon steel blades. Tooth sharpness is retained at high temperatures, thus permitting heavy feeds at higher tool velocities to give maximum cutting rates and tool life.

3. **New Cutting Rates**—up 650%.

Accuracy—held within thousandths.

Capacity—table feeds heavy work up to 1,000 lb.

Coolant—mist or flood for extended tool life at maximum sawing rates.

New Concepts of Band Machining Economy and Versatility

Contour-matic band machines are different. There is nothing else like them in the machining world. For machine tool replacements or additions, Contour-matics open new possibilities for the reducing of machining costs.

It is the choice of production personnel and methods engineers who have evaluated the band machining method. They find Contour-matics are their best machine tool investment.

Do what others are doing—question your band sawing and other machining methods by asking, "Can it be done on a Contour-matic?" Just call your local DoALL store for a free demonstration right in your own plant . . . or write.

B-56

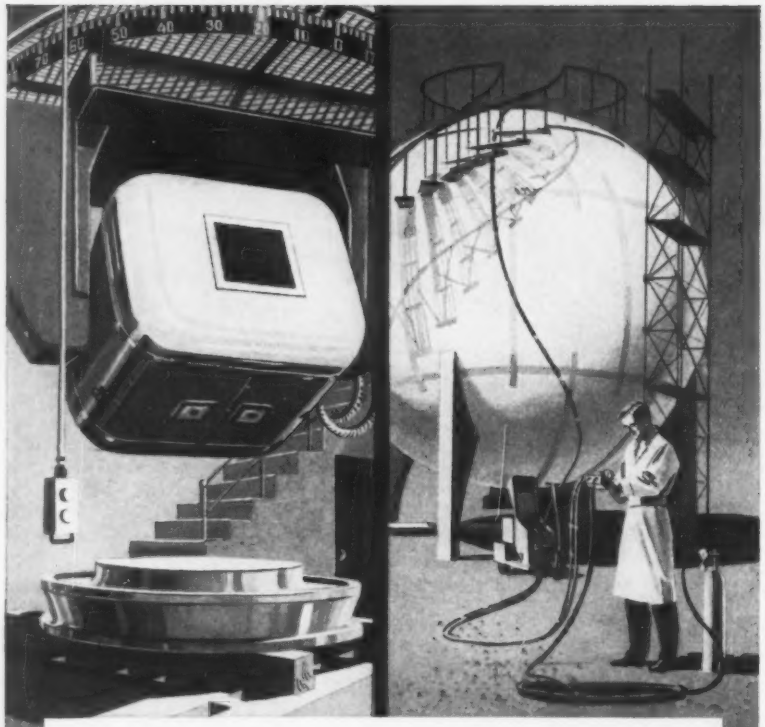
FREE—"Job Spotting" Service

For your evaluation—
illustrated case histories of job savings made by the Contour-matics over former methods will be mailed to you periodically. Send us your name on company letterhead.

Reg. T. M. The DoALL Company

THIS IS A TYPICAL DoALL STORE

The DoALL Company, Des Plaines, Illinois



Radiographic Equipment for all your inspection requirements:

STEEL 20" THICK OR WELDS 100' UP

Whatever your inspection requirement, Curtiss-Wright has precisely the X-ray or Isotope equipment you need. From a 31 Mev Dual Beam Stereo BETATRON which penetrates 20 inches of steel to a 30 kv X-ray machine for ¼ inch aluminum, Curtiss-Wright offers inspection equipment and engineering services for every material and thickness range. In addition, Gamma Isotope equipment such as the PUFF CAMERA* makes it possible to inspect hard to reach tanks, pressure vessels, structural steel, ship hulls, complex castings and piping of various sizes and shapes. In this Radiography technique the source is propelled by compressed air through special cable up to 100 feet in length in about 6 seconds. *Reg. applied for

COMPLETE RADIOGRAPHY EQUIPMENT & SERVICES

Gamma Ray Cameras and Sources • Field Portable X-Ray Machines
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EXPORT DIVISION, CURTISS-WRIGHT CORPORATION, 50 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK

(Continued from P. 72)

relations and **E. C. Carter,** appointed paymaster.

Consolidated Electrodynamics Corp., Analytical & Control Instrument Div. — **William Kneen,** appointed chief project engineer.

Bucyrus-Erie Co.—**J. R. Fitzgerald,** appointed work chief industrial engineer.

W. B. Hustead, appointed Chicago district manager, Kaiser Aluminum & Chemical Sales, Inc.

F. J. Stokes Corp.—**H. B. Hebble,** named product specialist, vacuum induction melting equipment, Vacuum Metallurgical Dept., Philadelphia.

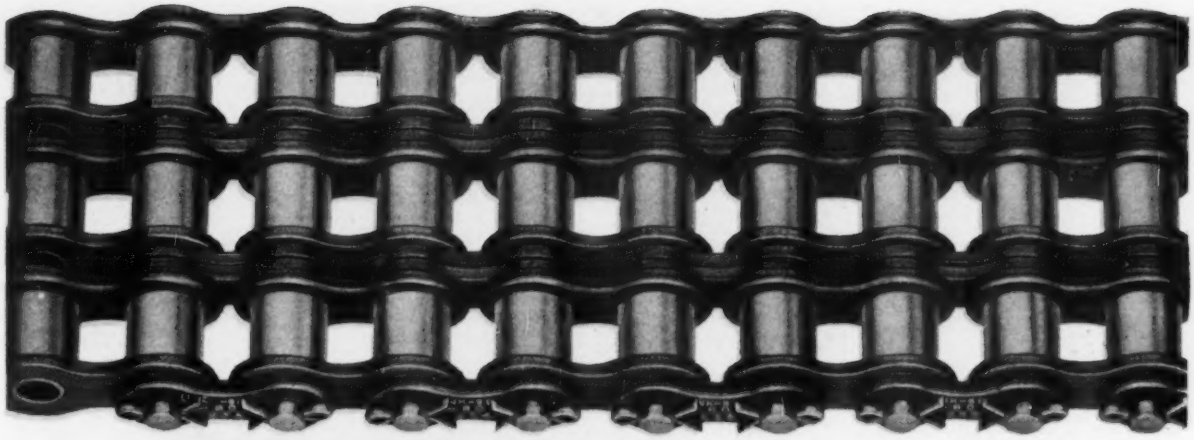
Edward Valves, Inc. — **Frank Wendt,** appointed sales engineer, Philadelphia area.

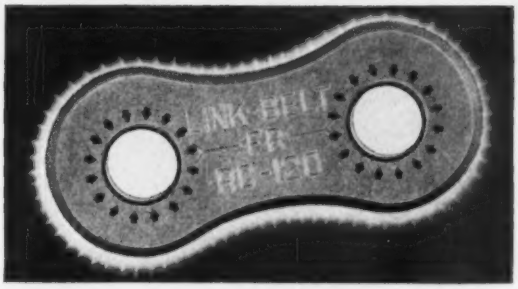
Crucible Steel Co. of America.—**Charles Seaberg,** appointed superintendent, and **S. P. Darbut,** asst. superintendent, Blast Furnace Dept., Midland, Pa., Works.

The Hanna Furnace Corp.—**E. J. Burke,** named district sales manager, Buffalo, N. Y.

Ajax Electric Co.—**E. L. Milford,** appointed sales engineer, Chicago and Midwestern area.

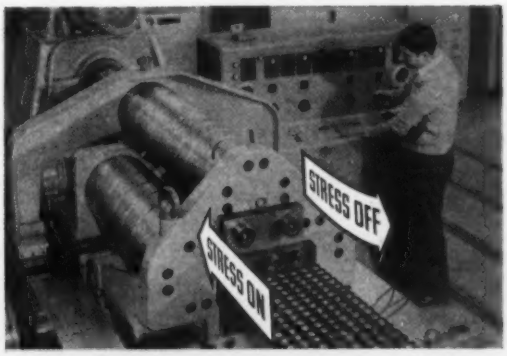
Kelsey-Hayes Co., The Metals Div.—**J. G. Ziemann,** appointed asst. chief metallurgist.





Arrows indicate critical areas treated with compressive stresses to improve fatigue resistance.

Fortified against fatigue



65 TONS OF CYCLIC TENSION! With this equipment—largest of its kind known to be in operation in roller chain testing—Link-Belt tests and rates roller chains. Rapid "stress-on, stress-off" action duplicates operating conditions at a greatly accelerated pace . . . proving over and over that Link-Belt chains are fortified against fatigue.

Link-Belt offers special FR® processed roller chain for applications involving repeated high-tensile loads

Jobs too rugged for standard roller chains are taken in stride by Link-Belt FR roller chain. Through its patented FR process, Link-Belt gives *greater dynamic strength* to the larger sizes of chain most likely to encounter severe cyclic loading. FR greatly raises the chain's endurance limit by compressing metal around pitch holes—the critical sidebar areas most vulnerable to fatigue failure.

The FR process results from the same design and metallurgical research that has produced many more "extras", all *standard* in Link-Belt roller chains. They include shot-peened rollers, close heat-treat control, lock-type bushings and others. For further details on Link-Belt roller chains, send for Book 2657.

LINK-BELT

15,070

ROLLER CHAINS AND SPROCKETS

BOOK 2657 has 154 pages of roller chain data. For your copy, contact your nearest Link-Belt office or authorized stock-carrying distributor. (See CHAINS in the yellow pages of your phone book.)

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

30% TO 50% LONGER LIFE FOR RESINOID-BONDED DIAMOND WHEELS

Six hundred separate trials, using 145 wheels, were run by the Diamond Research Laboratory to test a completely new type of natural diamond grit for resinoid wheels. The results: this new grit increases the life of natural diamond resinoid-bonded wheels by 30% to 50%.

The particles of this new grit do not readily pull out of the bond. Instead, they break down into ever-finer fragments which constantly expose new, sharp cutting surfaces.

TEST EQUIPMENT: Three 18" Jones & Shipman production grinders were fitted with special spindles to enable wheels to operate at 5500 surface feet per minute, the speed generally used in diamond grinding.

The wheels were of the D1A1 type, 6" in diameter, 3/16" face width, with 1/8" depth of resin. Each wheel contained 31 1/4 carats of the new grit. Metal to be ground was tungsten carbide of the same quality normally used for milling cutters, lathe tools, etc. During the course of the tests, 700 pounds of hardest carbide were ground away.

RESULTS: This new friable grit, Selected Natural Diamond (SND-RESINOID), increases the life of natural diamond resinoid wheels by 30% to 50%, depending on the type of job at hand. The grit will be available to your wheel manufacturer soon. Next time you order diamond resinoid wheels, specify SND-RESINOID . . . the most economical *and* the most efficient grit you can use.

Tests were run on these three Jones & Shipman production grinders. Results showed that the new grit, Selected Natural Diamond (SND-RESINOID), increases the life span of natural diamond resinoid wheels by 30% to 50%.

INDUSTRIAL DISTRIBUTORS (SALES), LTD.

YOU CAN DEPEND ON NATURAL DIAMONDS

NOW - A NEW "*Push Button*" FLYING SHEAR

NO DOWN TIME to change cut length or synchronization

A HALLDEN SHEAR EXCLUSIVE

A major improvement in high production continuous strip process in-line shearing.

Revolutionary new designs now permit synchronization adjustment AND gear changes to be made without stopping production. Changes in cut lengths are made in just seconds. Hallden Shears can be furnished in processing lines built by leading machinery manufacturers the world around.

DESIGNED AND BUILT BY

HALLDEN

THE SHEARING SPECIALISTS

THE HALLDEN MACHINE COMPANY • THOMASTON, CONNECTICUT

Associates: The W. H. A. Robertson & Co. Ltd. Bedford England

New Machine Spirals Welds On Tubing at High Speeds

A new welding concept puts all its energy to work converting strip materials to finished tubing at very high speeds.

Both ferrous and nonferrous can be welded with equal ease.

▪ Here's a high-frequency resistance welder that can produce helically welded tubing, 0.004 in. thick, at a rate of 1000 fpm. That's almost one mile of welded seam every five minutes.

The unit responsible for these extreme speeds makes use of a new concept in welding. And it's equally at home with aluminum, copper, zirconium and ferrous metals.

At present, this spiral tube welder will join tubing from 1½ up to 10 ft in diam and a thickness range from 0.004 to ⅜ in. A good example of the unit's efficiency is its ability to weld 3-in. diam tin-plate tubing at 150 fpm.

Size Factor—This mill and Thermatool welder is a product of the New Rochelle Tool Corp., New Rochelle, N. Y. The machine takes only 50 sq ft in floor area, much less than that of the common 40-ft long tube-forming mills. Total weight of the new welding setup is 11,000 lb, and can be operated as a mobile unit.

The mill, mounted on a platform several feet above ground, consists mainly of a motor-driven device. This piece of equipment draws the metal strip into the mill and moves it through forming rolls that effect the spiral shape and the desired diameter. It finally delivers the formed open seam to the welding head.

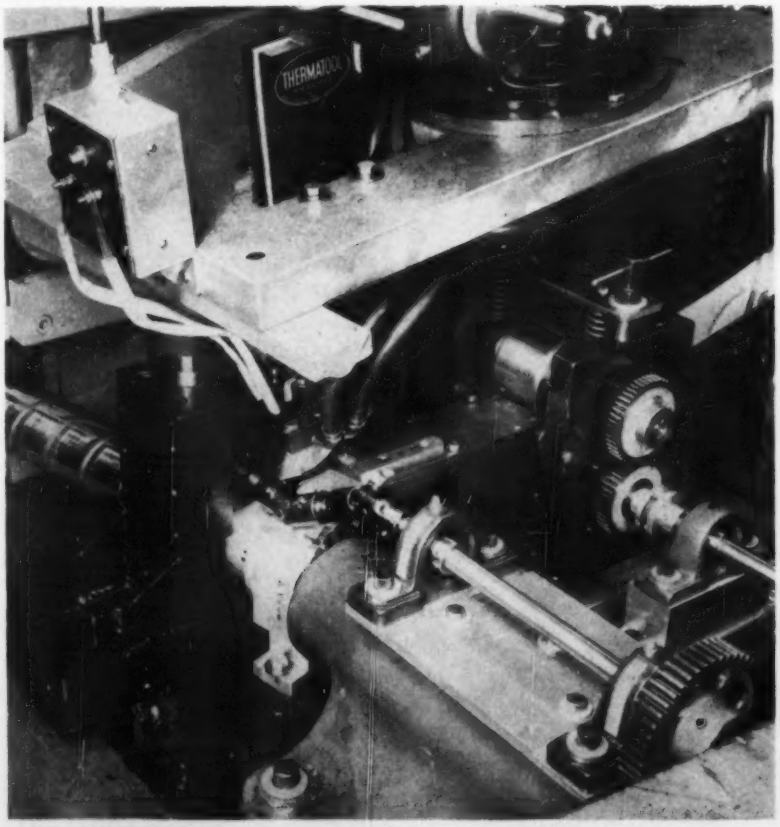
The strip metal is spindled on a stand at the end of the mill in several thousand foot coils. The metal enters at a pre-set angle to produce desired number of spirals per foot.

As the strip is coiled in the mill, it makes an elongated V. Then two sliding contacts, one on either side of the open seam, introduces the high-frequency current into the metal. Conventional resistance welding uses roller-type electrodes instead of contacts.

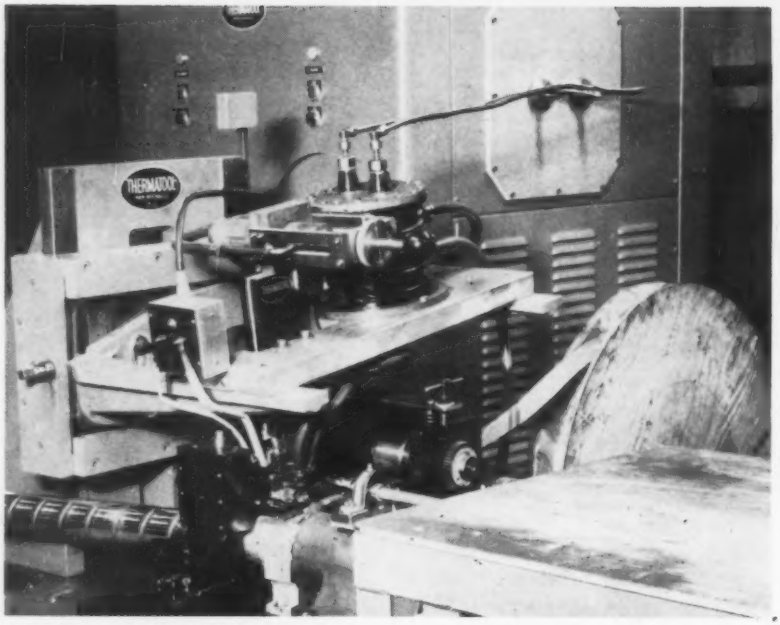
High-Frequency Energy — This new concept in resistance seam welding of tubes and strip metal involves high-frequency electrical energy. Now the current reverses at high rates of 450,000 cycles per second. But the current doesn't follow the direct low-resistance path between two contacts. It takes the very long, low-inductance path.

Each side of the V joint is a return conductor for the other. In following the part of lowest inductance, the current flows on the two surfaces that face each other. And these are the surfaces being welded.

Two Contacts—The two contacts ride about an inch or two from the



SPIRALS STRIP: Strip metal is fed into mill. Rolls twist it into helical shape. Two sliding contacts ride it into weld station.



INTENSE CURRENTS: High-frequency generator powers 450,000 cycles per second currents to the input transformer. Split-second welding is done.

root of the V, on the open seam. At the same time, high-frequency current hugs the opposite edges of the metal. This skin effect produces a localized high-intensity heating. Thus, temperatures on the edges of the root of the V become high enough for welding.

Pressure applied at the root of the V prepares the edges for the desired lap, butt or other welds.

Mashed lap welds are the most effective with the Thermatool process. But, since a mandrel has to be inserted in the tubing to prepare the joints, they've been restricted to 1½-in. minimum diam tubing. New Rochelle Tool is now working on some ideas to permit welding of smaller diameter tubing.

Practical—In many cases, end-users will be able to reduce the thicknesses of their tubing. How come? The spiral welds produce a stiffness that adds overall strength to the tubing itself. Reduced wall thicknesses spell lower production costs.

The mill fits nicely on a mobile unit. The high-frequency generator can pick up enough power from a separate diesel-engine hook-up. Bring along some 2000-lb coiled lengths and you can set up your operation just about anywhere you want.

These lightweight metal tubings will make good pilings too. Used in the forms for concrete piles, they'll still have greater stiffness. Other practical uses would be pipes for irrigation, emergency water or even sewage service.

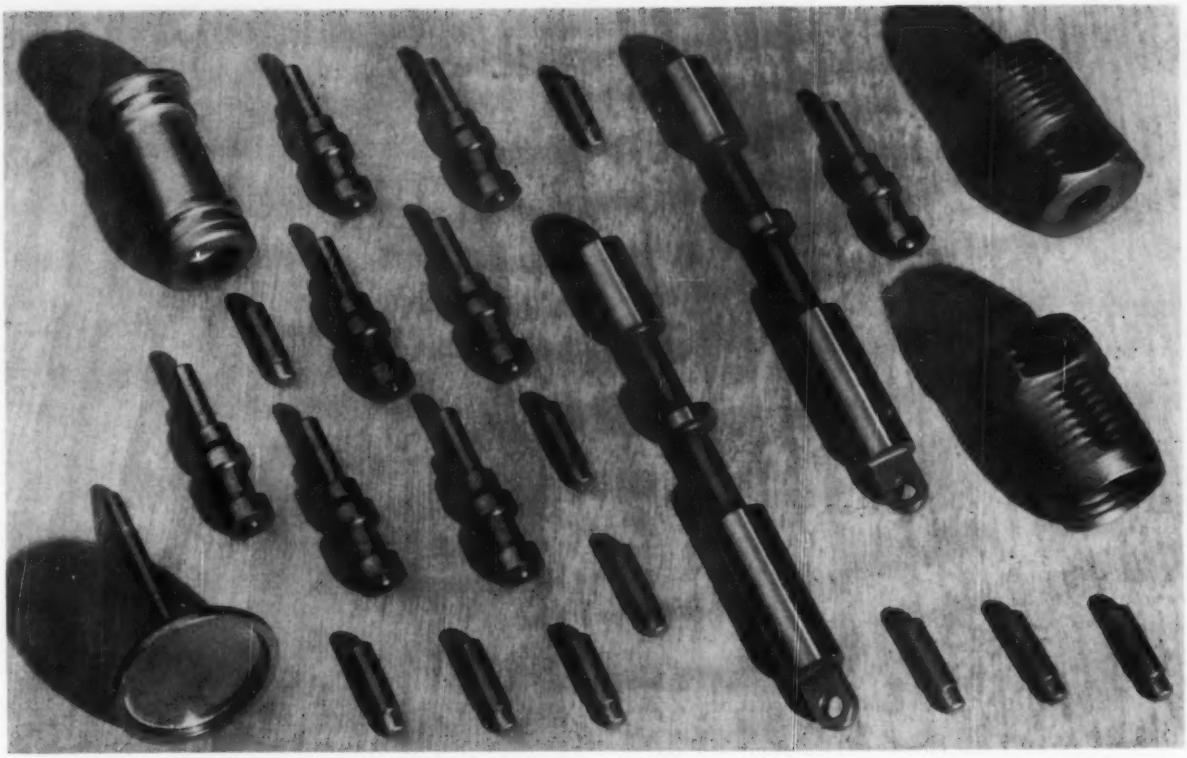
Costly Maintenance? — No. It's negligible. The plant engineer has the needed knowledge to handle electrical maintenance. The welding contacts give a service life of about 100,000 feet or more of weld. And it only takes five minutes to change contacts anyway.

Downtime amounts to very little. Starting a new strip coil or changing a tube diameter only takes a few minutes. And the whole unit can be operated by two semi-skilled workmen.

How Fast the Welder Works

Wall Thickness, In.	*Speed, fpm 25-kw	60-kw	140-kw
STEEL			
0.031	100	275	400+
0.078	30	100	200
0.125	—	57	140
0.195	—	—	75
0.250	—	—	52
0.312	—	—	36
0.375	—	—	25
ALUMINUM			
0.025	100	300+	—
0.035	82	260	—
0.045	60	200	—
0.051	55	180	—
BRASS			
0.025	—	300	—
0.032	—	205	—
0.040	—	190	—
0.050	—	180	—
COPPER			
0.025	—	190	—
0.032	—	140	—
0.040	—	80	—
0.050	—	80	—

* Guaranteed on ⅞-in. OD tubing and full production.



CLEAN AND EXACT—Case hardened by a dual-action quenching oil, these parts have clean finish, true tolerance. Slow cooling prevented distortion. End uses will be in the automotive and aviation fields.

New Oil Cleans as It Quenches

Why spend the extra time and expense to get a bright finish on case-hardened parts when one oil can do both for you?

▪ Many of the parts going into automotive and aviation equipment are case hardened. This is no easy operation, since most of them have intricate shapes and odd lengths.

The desired tolerances can usually be held during quenching. But the main problem is one of keeping the parts clean. Otherwise the parts have to be sandblasted or tumbled to give them a clean finish.

Western Automatic Screw Co., Elyria, Ohio, found an oil to do both jobs in one. It's called Gulf Super-Quench.

Double Duty—This dual-action quenching oil provides fast cooling through the critical hardening range and a slow quench through the lower temperature range.

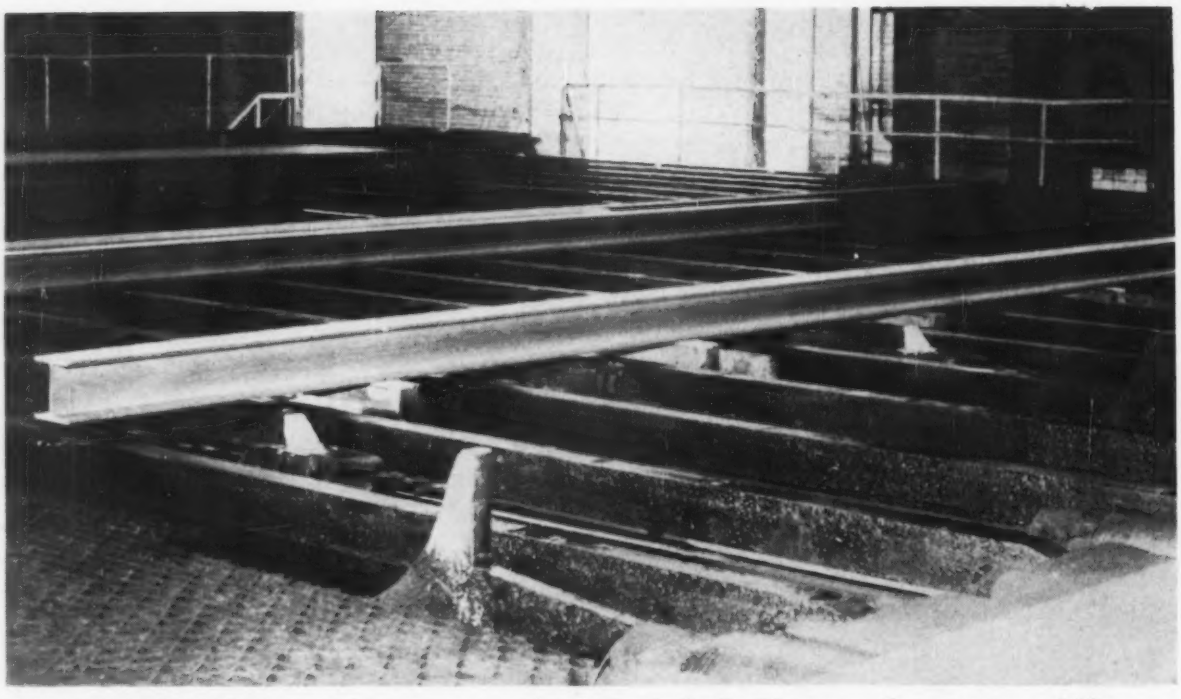
The fast quenching power of the oil is its chief asset in producing clean finishes, while its slow cooling in the final stage of quenching tends to reduce distortion and maintain tolerance. Gulf engineers claim that the refining techniques used on the mineral-oil base have a lot to do with its performance.

B. W. Miller, Western Automatic's heat treat foreman, cites an example of a B1113 valve for an automatic transmission. This valve was first carburized in an atmosphere furnace at 1550°F. Requirements called for an Rc hardness of 60 and a case of 0.023 in.

Close Tolerances—Largely due to action of the quenching oil, valve expansion was held to within 0.003 in. At the same time, the part obtained uniformity of hardness and hardness penetration.

And the fact that the oil didn't thicken meant no sandblasting of the finished piece. The scale-building dirt in the bottom of the 600-gal quench tank was merely shoveled out.

The new oil not only gives freedom from distortion and clean finishes but another advantage as well. It's reported that the same batch can be used over and over without replenishing additives.



QUICK WEIGHINGS: Supported by structure under the hot-bed rails, I-beams get fast, accurate weighings.

Electronic Scale Records Accurate Weights of I-Beams

There's no margin for error in this setup. Flashed signals keep I-beam tolerances in line, cut down on waste.

▪ Whole I-beams—as long as 40 ft and weighing as much as 2500 lb —are being weighed right after rolling at a large eastern Pennsylvania steel mill. An electronic device does the job.

What's so unusual about prompt weighing? For one thing, it permits accurate rolling to specifications. And it also reduces waste.

This is the System—SR-4 load cells, products of Baldwin-Lima-Hamilton Corp.'s Electronics and Instrumentation Div., Waltham, Mass., are the sensing elements of the weighing system.

With it, instructions can now be flashed instantly to the roller whenever the beams are outside the 2 pct tolerance range. This permits the roller to make sure that all future rollings fall within tolerance.

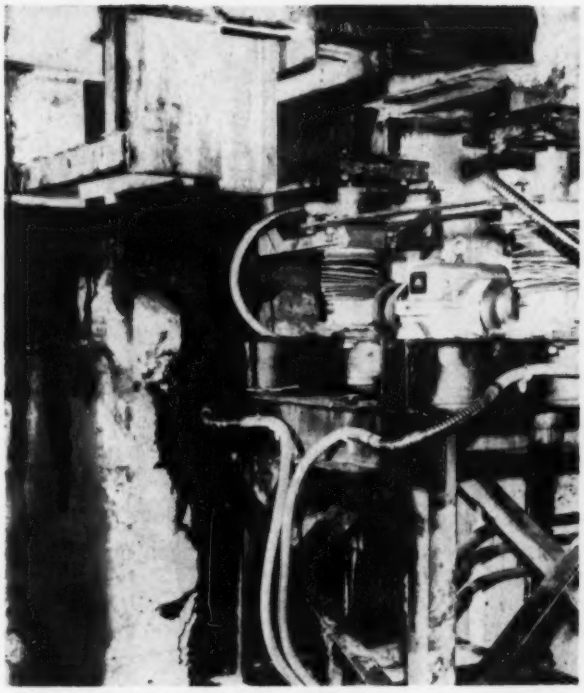
An Improvement — Before the new system was installed, sample drafts were cut from the beams. Since there was no way of telling whether the draft was typical of the beam, weights were little more than estimates. Time was lost too, for each draft had to be weighed on a mechanical scale in another building.

The new method weighs beams at the front of the hot bed before they're moved to cooling. Beneath the bed and between the hot-bed rails project eight support rails from a platform. And the platform rests on four 2000-lb SR-4 load cells—one on each corner.

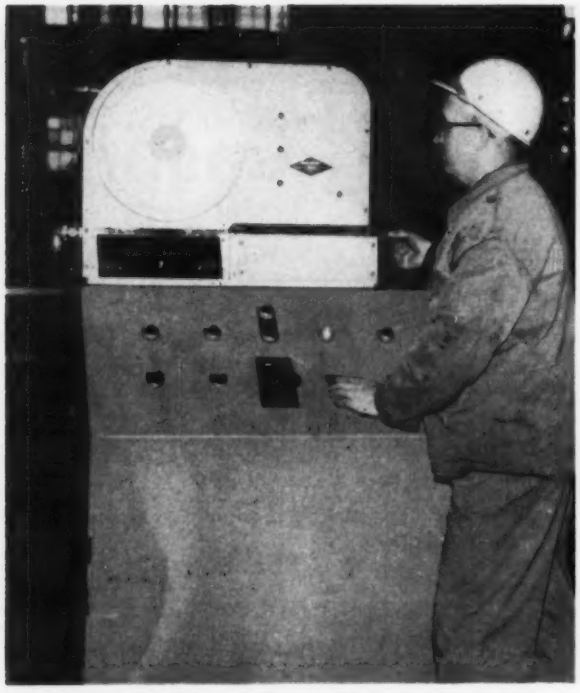
An electrically driven superstructure is located between the base of each load cell and the concrete piers that support the system. It's used to raise the weighing support rails above the level of the hot bed.

How Does It Work?—As the elevating structure raises a beam for weighing, a reaction takes place in the load cells. A change of resistance within the load cell occurs that is proportional to the beam's weight. It's transmitted as a change in voltage via an amplifier to serve and balance motors located in the dial mechanism of a console.

The signal moves the pointer on the calibrated dial until the exact



SLUDGE-PROOF: Enclosed load cells, having no moving parts, are not affected by hot-bed rail grime.



DIAL INDICATING: Located near the hot bed, the console controls automatic weighing of I-beams.

weight of the beam is indicated. At the same time the weight is printed on a logging card. The operator places this in a slot right under the dial. The next step is automatic. The elevating device lowers the beam to the hot bed.

Dirt's No Problem — Since the system functions without moving parts, it's well suited for I-beam weighing. A mechanical scale could handle the job in the same accurate manner. But the costs in maintenance would be expensive.

Aside from the large amounts of dust and dirt in any steel mill, a great deal of oil, placed on the hot-bed rails to ease the sliding of beams, bathe everything under the bed. This sludge would have a harmful effect on the moving parts of a mechanical scale. Think of the corrosion on pivot points and bearings!

The electronic system is protected against sludge damage, since its load cells are self-enclosed. There are no mechanical parts. Weight impulses are sent to the dial through electrical cables. So there's no need to maintain knife edges, bearings or hydraulic systems. Nor are there any pivot points to lubricate.

Wide Ranges — The electronic system can handle any size of beam. At this mill it weighs beams 40 ft long, ranging in weight from 10 to 67 lb per ft. The overall range is from 400 to 2500 lb per beam. The capacity of the hot bed limits the beam length to 50 ft.

The weighing system is checked for accuracy every week. At present, 50-lb weights are used to do the job. But plans are afoot to suspend a calibrated beam from the ceiling and lower it onto the scale whenever needed. This will cut calibrating time from about 30 to only a few minutes.

Accurate — The load cells are simply built. Their main part is a bonded wire strain gage. And a matched set of four is bonded to a high-strength steel column machined to close tolerance.

The four gages are connected electrically in the form of a wheatstone bridge, initially balanced. The circuit also contains temperature-compensating resistors.

Each time a load is placed on the cell, the steel column is compressed as are the wires bonded to it. This creates a change in resistance, unbalancing the bridge circuit. As soon as this voltage variation is amplified, the dial indicator records the exact load.

Good Performance — This scale has been in operation for over six months. And during that time the only maintenance has been routine. They've inspected and lubricated the elevating device and the drive unit. In fact, the only moving parts in the setup are in the drive itself.

Weighings occur at an average rate of one or two per hour during 20 eight hour shifts per week. On duty around the clock, the electronic system has done its job without any downtime.

A previous setup in the same plant had been used in a shipping section. Its success was the main reason the equipment took over the duties of I-beam weighing.

Ultrasonics Cuts Grain Growth During Casting of Forging Ingot

By E. B. Wright, D. R. Carnahan and J. H. Kelley—Westinghouse Electric Corp., Pittsburgh

Previous work with ultrasonics on castings has been on small parts.

This test on a forging ingot points up the benefits of ultrasonic treatment on a larger scale in vacuum arc furnace.

▪ In the vacuum arc casting of most metals, large columnar grains tend to grow perpendicular to the advancing solidification interface. With pure metals such as molybdenum, niobium and vanadium, this columnar structure results in planes of weakness which often fail during forging or extruding.

In casting various alloys, this same condition occurs, but here it's complicated by segregation of alloy constituents.

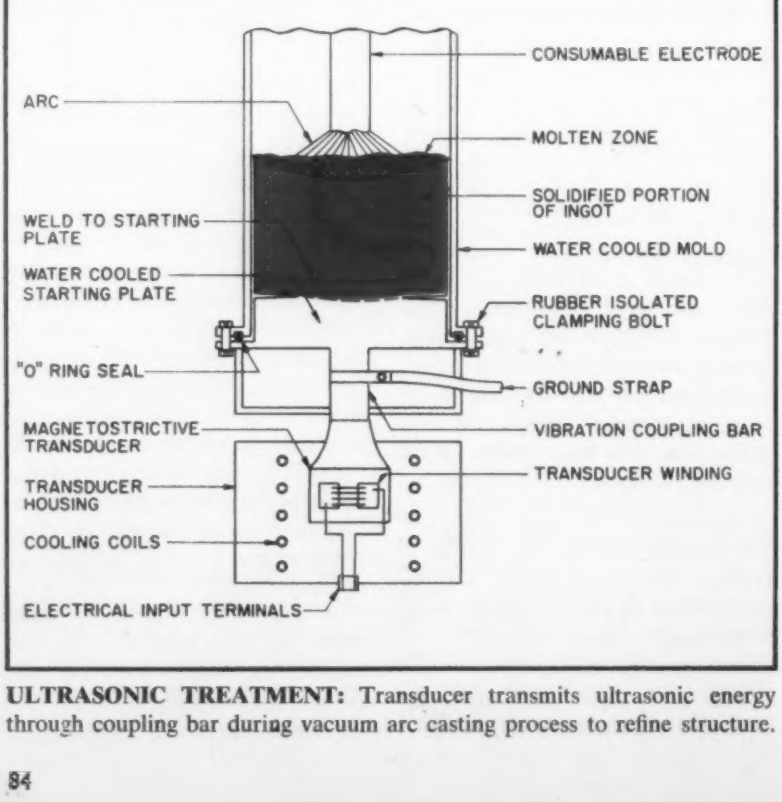
In the case of rotor forging steel, sulfur and other elements segregate at the surfaces and ends of columnar grains. This tends to produce a concentration of these materials between the columnar and equiax regions of the finished ingot.

Try Test on Full Scale—Because of the success in using ultrasonics for the reduction of grain size in smaller castings, it was decided to test the technique on the forging steel material. While all previous work had been done on castings weighing 50 lb or less, the smallest forging steel ingot which it was deemed practical to treat weighed more than 1 ton.

Results of previous work indicated that 200 to 2500 w per lb of material might be necessary. This suggested a total power input of several hundred thousand kw to treat a 2400-lb ingot.

The particular technique proposed was used first by experimenters at the Westinghouse research laboratories and the Westinghouse materials engineering departments on small ingots with complete success. It involves the introduction of ultrasonic energy through the base plate or starting plate which serves as the bottom of the furnace.

Furnace Gets Ultrasonic Boost



ULTRASONIC TREATMENT: Transducer transmits ultrasonic energy through coupling bar during vacuum arc casting process to refine structure.

Weld for Coupling—In order to insure good ultrasonic coupling between the transducer unit and the ingot, the base of the ingot was welded to the starting plate. The initial arc current was increased to the point that part of the starting plate was melted.

It resulted in a weld covering about 60 pct of the bottom area of the ingot. This was about as good as could be expected since the arc occurs only near the center of the plate which is water cooled.

The furnace was isolated from the vibrating base plate by a rubber ring which also provided the necessary vacuum seal. The base plate was clamped in place with rubber grommeted bolts. There was no evidence of vacuum leak or vibration of the furnace walls.

Joint at Low Stress—The coupling bar to the transducer unit was

constructed as an integral part of the starting plate and was threaded at its lower end. The joint was located at a low stress point in the vibrating system so as to minimize the losses in transmitting energy.

The transducer unit of the magnetostrictive type was attached through a converging horn to the coupling bar. The horn and the transducer were joined by a high temperature braze also located at a low stress point. The transducer was immersed in transformer oil which was cooled by water circulating through coils at about 2-3 gpm.

The ultrasonic system had a resonant frequency of about 18 kc per sec. At this frequency the transducer unit was rated at 1500 w. The ultrasonic generator driving the transducer was an electronic type with an output rating of 10 kw.

Use Control Ingot—In order to provide an accurate indication of the effect of ultrasonics on the forging steel, a control ingot was prepared from the same melt as the treated ingot. The melting rate, arc current, vacuum level and other variables were held the same for both ingots.

In the case of the vibrated ingot the ultrasonic power level and frequency were held constant throughout the experiment. Occassional attempts to tune the vibrating system indicated that there was no appreciable change in the resonant frequency as the ingot increased in length.

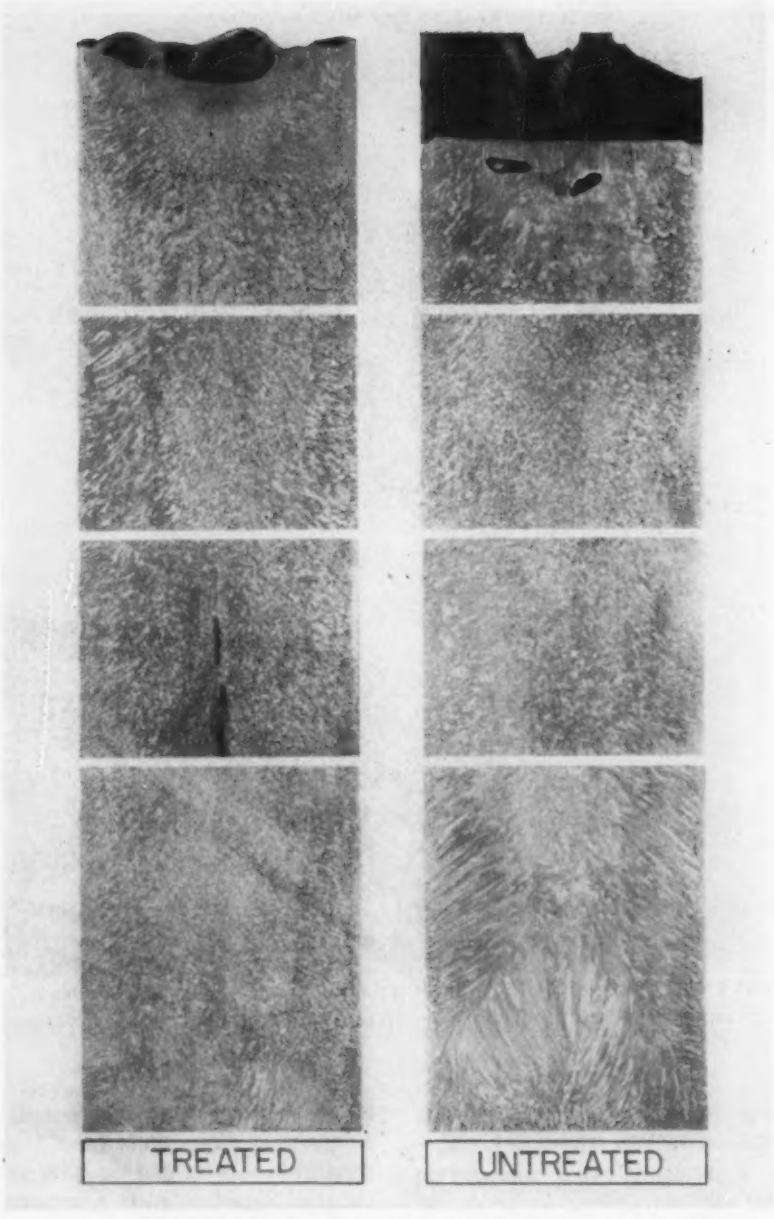
However, some change in the electrical impedance of the transducer unit was noted during the first few minutes of operation. This change was probably a result of the increased mechanical loading provided by the slowly growing ingot.

Compare Sections—At the completion of casting, both the treated and untreated ingot were sectioned longitudinally and etched. The ingot which was not vibrated had large columnar grains in the lower 15-16 in.

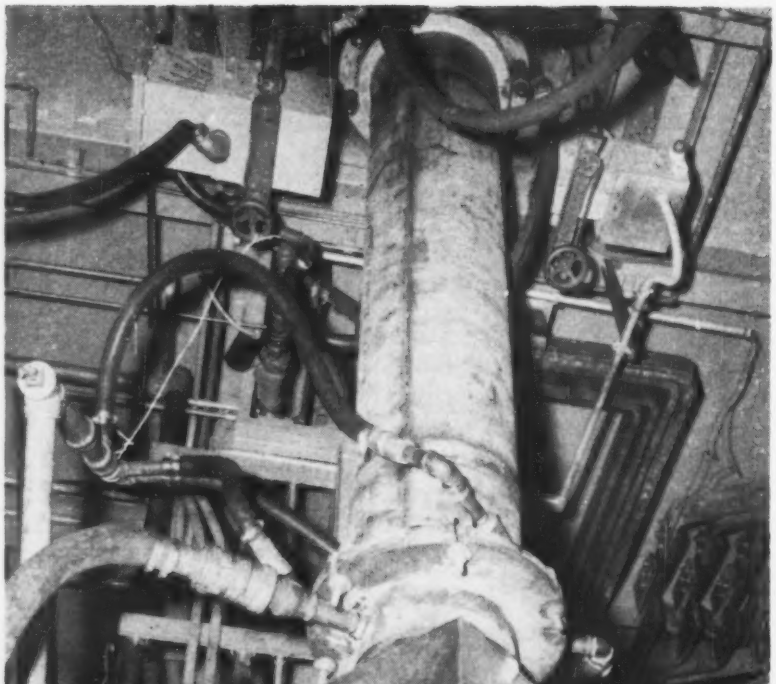
It should be pointed out that this casting had a relatively fine grain structure compared to most forging steel material. This means that the castitng technique utilized was relatively favorable to grain size reduction.

Compare the lower section of the untreated ingot with the lower section of the vibrated ingot. One can see the pronounced reduction in columnar grain growth caused by ultrasonic vibration. This effect extends about 16-18 in. from the base of the ingot.

Small Difference Elsewhere — Above this level the conventionally cast material appears to have somewhat finer grain structure, although the difference is too small to be significant. Also, no great differ-



COMPARE CROSS SECTIONS: Ultrasonically treated ingot (left) has greatly reduced grain growth in lower section compared with untreated ingot (right). In upper sections there's not much difference. There're several reasons to explain void which appears in center of treated ingot.



VACUUM ARC SETUP: Transducer mounts at bottom of vacuum arc furnace in test setup. Rubber mountings protect mold from vibration.

ence in gas content or in gross segregation pattern was noted.

A substantial void appeared in the vibrated casting at about the point where the effect of the ultrasonic energy apparently stopped. Several plausible reasons, not all related to the ultrasonic action, have been suggested.

First, it was noted than an over-run of the molten pool had taken place just opposite the point where the void started. It is conceivable that the intimate contact with the mold provided by this over-run created an abrupt change in solidification, thereby, initiating the void formation.

Molten Region Isolated — Secondly, the freezing conditions may have been such as to deepen the molten pool along the axis of the ingot. It's possible that the walls of the pool closed in such a manner that a molten region became completely surrounded with solidified material. This would result in a void as the isolated molten region solidified and shrank.

A third possibility is the enhanced degassing of a melt known to be caused by the introduction of ultrasonics. In this case, effective degassing may have stopped at about the same location that grain reduction is no longer apparent.

If some of the gases initially collected by the vibrating action became trapped when this action decreased to a lower level, a void could be expected to appear at about this point. However, the grain orientation adjacent to the void tends to make this the least likely of the three explanations.

Why Not More Effect? — Why did the apparent effects of the ultrasonic energy extend only to about the 16-18 in. level? It's generally conceded that this is primarily a matter of attenuation.

As the length of the ingot increases the ultrasonic energy has to traverse a greater path length in solidified material which is still at a high temperature.

At present, there is very little data available on the sound transmission properties of metals at temperatures close to the melting point. It's agreed, however, that most such materials tend to be much less efficient sound carriers at high temperatures.

Unfortunately, the distance into the casting which sound will penetrate cannot be doubled merely by doubling the input power. Thermal conductivity, elastic hysteresis, mechanical relaxation, sound intensity, and frequency are all variables to consider.

Properties Vary—For a sound path of the type encountered in this experiment, the properties of the transmitting medium as well as the sound intensity vary over the length of the path. It might well be possible to express both attenuation and distance from base of ingot as a function of time so as to calculate the minimum amount of ultrasonic input power required at any given instant.

However, for a given material there is very little that can be done to reduce the amount of attenuation which will occur. Lowering the average temperature along the sound path through improved cooling may help to some extent.

This brings up the question of whether or not attenuation will place a limit on the dimensions of a casting which can be treated with ultrasonic energy. Previously, it had been felt that the power re-

quired per pound of material was the primary limiting factor.

No Problem in Power — This experiment indicates that this probably is not the case. The fact that about 600 lb of material was treated successfully with less power than in many prior instances for only 4-5 lb completely changes the outlook with respect to power requirements.

It's now safe to say that castings weighing up to at least 1-2,000 lb can be treated with reasonable amounts of vibration energy. The attenuation problem can be solved by changing the relative dimensions of the ingot.

However, even this approach may encounter serious size limitations if the largest practical propagation distance is only about 2 ft. Whether or not this is the case will be determined in the course of subsequent experiments which are now in progress.

Learn About Reduction — Also, the basic mechanism by which the grain size reduction is effected must be investigated more thoroughly. So far, three principal theories have been postulated.

One theory is that the increased number of nuclei provided by cavitation at the solid-liquid interface is primarily responsible for the reduced grain size. However, it's quite unlikely that the power density utilized in the forging steel experiment was sufficient to cause cavitation more than a few inches from the ultrasonic coupling bar. It's felt, therefore, that reduction of the columnar grains in the forging steel was not the result of cavitation induced nuclei.

Another theory suggests that the grain size reduction is brought about by the physical break-up of larger grains. If such is the case, this break-up may be the result of the high intensity, short duration shock waves generated by cavitation implosions or it may result directly from the stresses induced by the sound wave itself.

How Much Intensity? — The question arises as to whether a relatively low intensity sound wave can produce a large enough strain to fracture the rather plastic grains at temperatures in the vicinity of the melting point. Or, is the growth of a large columnar grain such a critical process that only a minute disturbance will prevent its formation?

A third mechanism by which grain refinement can result from ultrasonic energy was suggested recently by Dr. W. A. Tiller of the Westinghouse research laboratories. Details are still being worked out and are not yet available.

It explains the results obtained in the forging steel experiment, but does not necessarily apply fully to all of the work which has been reported on thus far.

COMPLETED INGOT: Test with full-scale equipment shows the practicality of ultrasonically treating forging steel during vacuum arc casting.

To Boost Propagation—As for the equipment side of the problem, much work remains to be done before ultrasonic energy can be used effectively for the processing of large castings. The primary problem is one of coupling the vibration energy to the ingot and of propagating it efficiently to the advancing solid-liquid interface.

It's expected that more difficulty will be encountered in the treatment of castings ranging 6-8 ft in length. Also, in many other types of casting it is not as convenient to provide a continuous sound path between the furnace or mold and the ingot as was done in this case.

Form Tubing by Inflating Strip

Makes Compact System That's Easy to Install

Here's a new way to install tubing. Buy it in ribbon form, strip it in place, then inflate it.

It costs less to ship, too, since you don't pay for shipping the "hole."

▪ Strip tubing—shipped as a ribbon, then blown up at the point of use—will soon be on the market. It holds all sorts of design possibilities in the fields of construction, electric power distribution, communications, rockets and missiles, farming, packaging, chemicals and other industries.

Strubing (for strip tubing) will soon be made in experimental production by Wolverine Tube Div., Calumet & Hecla, Inc., Allen Park, Mich.

Won't Ship Hole—The fact that the thin-wall seamless tubing will be shipped as a ribbon means that there'll be less bulky handling and lower shipping costs. Secondly, the production process is expected to lower costs further. Classified as cold rolling, the process will make it possible to get thin-wall tubing in thicknesses or of materials that you can't get today, or at such cost that it's often out of the price range.

To give some idea of the compact package that can be shipped, all the heating ductwork for a 7-room house will fill an orange crate. Compare this with a truck-load of ordinary tubing. And it's a simple matter to string the ribbon through the house, then inflate it after it's in place.

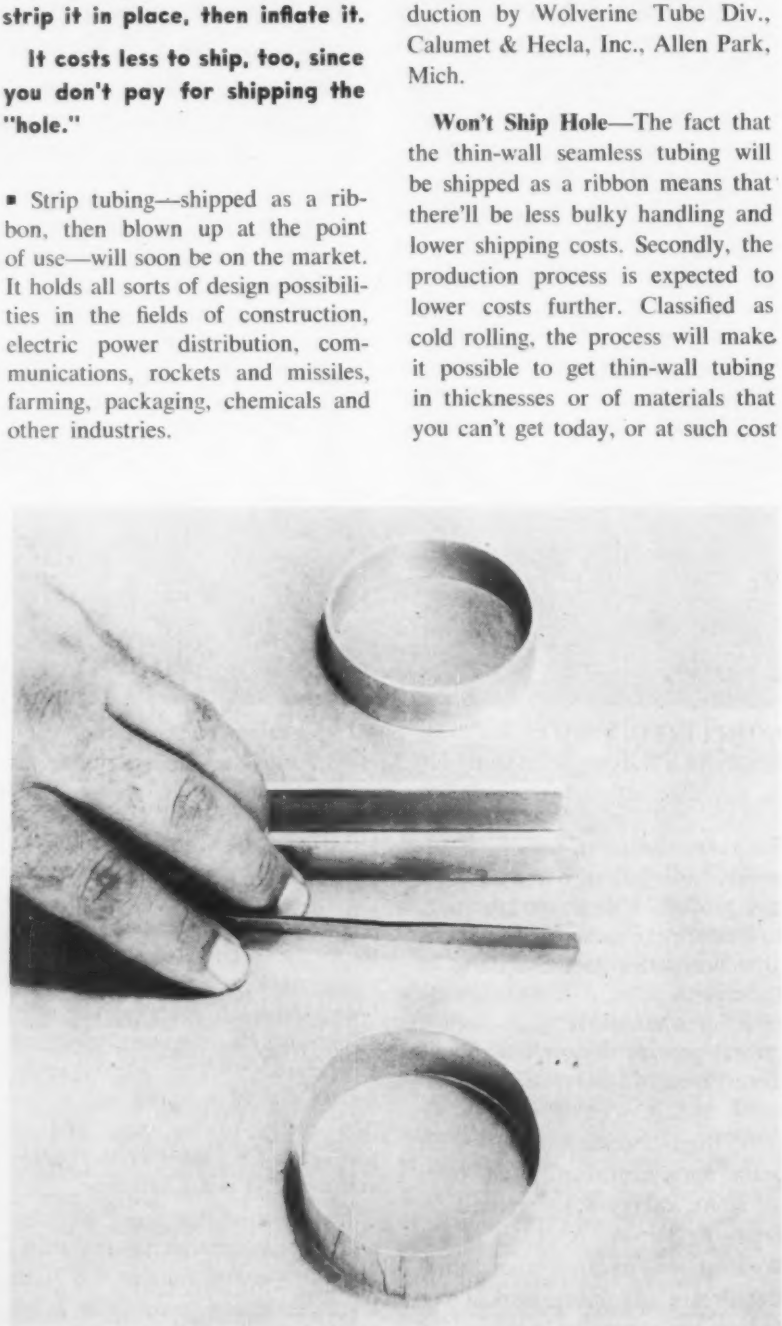
Lining by Inflation—Strip tubing might be used to make low-cost corrosion-resistant piping for the chemical, petroleum and process industries. All that's needed is some Strubing of tantalum or some other corrosion resistant material inserted in a pipe of mild steel, then inflate it to form an inner liner.

This same technique might also be used to repair leaks in water mains and other underground pipes, thus saving the time and expense of ripping up the pavement.

On construction jobs, Strubing will save time in installing temporary piping for water, fuel and compressed air. Truck - mounted reels would simply uncoil the necessary amount of strip to be inflated and coupled.

East to Handle—Manufacturing plants can benefit not only by the lower shipping costs, but also by the small amount of storage space that strip tubing takes as well as by its ease of handling. The material can be used right on the production line from a reel, inflated and cut to the desired length. It'll be particularly good for continuous operations.

Some typical uses might be for instrument lines, automotive tubing, overflow and thermostatic control lines, and for tubes in ball-point pens. Strubing made of stainless steel, zirconium, titanium, tantalum,



START TO FINISH: Typical sequence starts with 3-in. diam base tube which is flattened, then re-rolled to thinner wall thickness. Third strip forms tube section at bottom after it is inflated.

columbium and other special metals could be very important to rockets and missiles for fuel lines. In large diameters, it'll serve for making seamless rocket and missile bodies.

Makes Good Package—Wolverine Tube believes Strubing in foil thicknesses will be a contender as a packaging material for frozen foods, toothpaste, or merely to cover food for reheating. With chicken, for example, it will be easier and neater to insert it into a length of Strubing and simply crimp the ends rather than wrap a foil sheet around it.

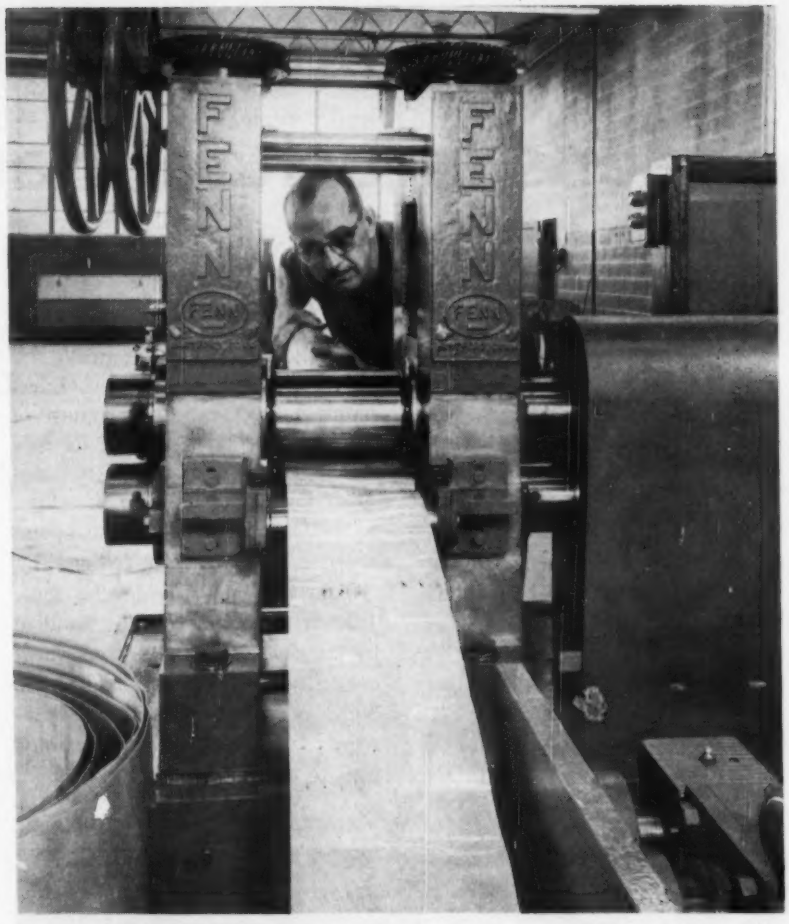
Heavier-wall tubing might also be used for canning. Besides being seamless, it lends itself to continuous canning lines.

What About Inflation? — The methods and equipment for inflating Strubing will vary according to the material and dimensions of the tubing. Hydraulic pressure, air pressure and mechanical means have been used successfully. In some sizes, the tubing has been inflated by using tap water pressure.

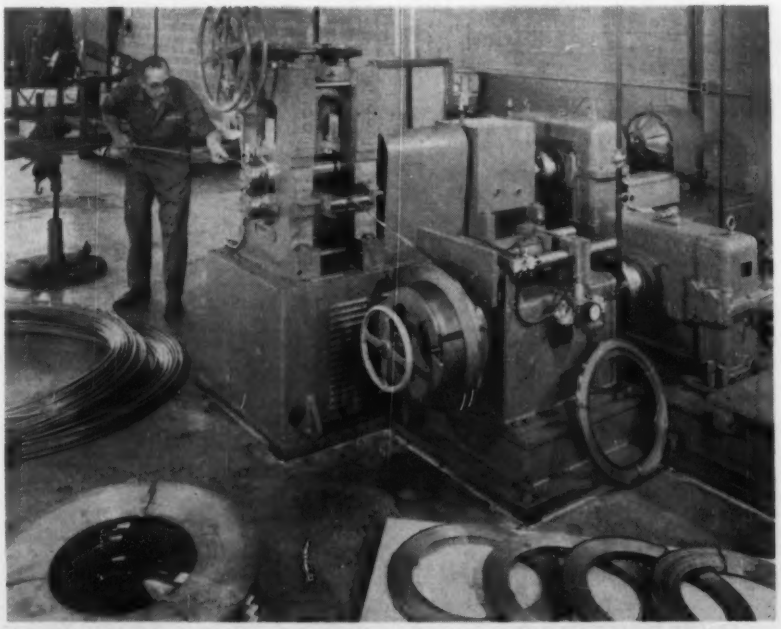
As for size, it can be made as small in diameter as the lead in an ordinary pencil or large enough for a man to walk through. Wall thicknesses can range from that of household foil to thick-wall pipe. It's possible to make and ship Strubing in lengths up to 15,000 ft.

How It's Made—The method for making strip tubing is said to be rather simple. First, it's made to a hollow shape by conventional methods. It then passes through a rolling mill and is flattened into a ribbon. Rolling lengthens the original tube by making it thinner without changing the inner diameter. The diameter is limited only by the size of the starting piece. The size of the starting piece in turn is limited only by the rolling mill's capacity.

A pair of fins on the outside is an inherent part of the tubing. The fins can be removed, but in thin-wall tubing, they serve as ribs to give it added stiffness and strength.



FIRST STEP: Base tube passes through rolling mill to be flattened into ribbon. It's made thinner and longer without changing diameter.



MILL MAKES RIBBON: Here's an 800-ft roll of ½-in. diam base copper tubing being fed into mill. It makes 3000-ft coil of strip tubing.

Semiautomatic Fabricating Line Speeds Structural Handling

Automation is one of the best hurdlers of high costs in production. An Indiana fabricator is saving $350,000 with its new setup.

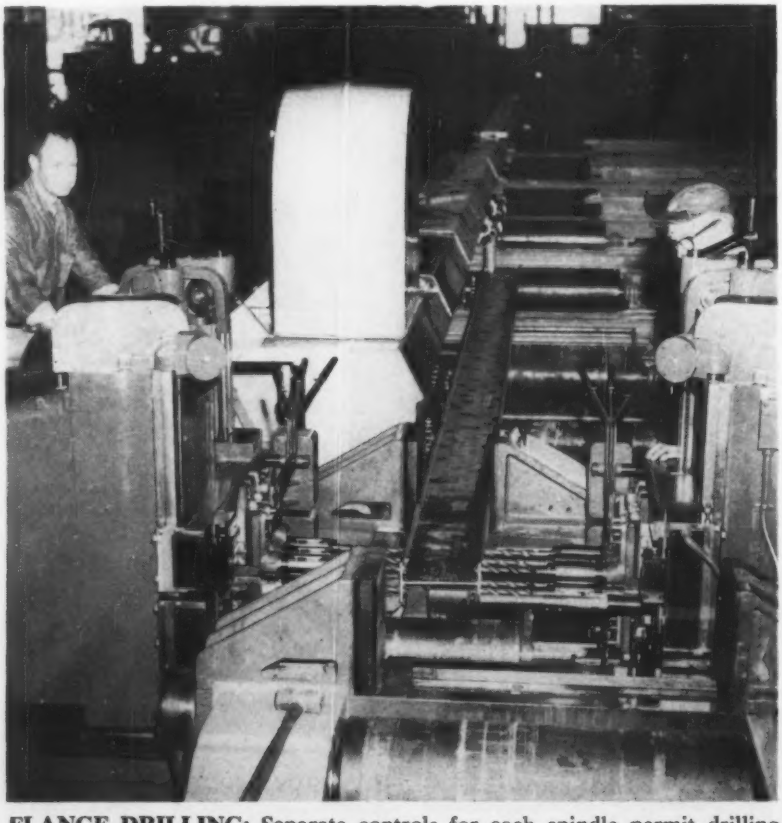
By K. W. Bennett,
Chicago Regional Editor

▪ It's been estimated that 50 pct of direct labor costs in a steel fabricating shop go into materials handling. International Steel Co., Evansville, Ind., is tackling this problem with a new semiautomatic fabricating line.

It's a three-station line that cuts manpower requirements from 27 men to four machine operators. Aside from cutting structural steel to length, the new setup drills the needed holes in webs and flanges, either horizontally or vertically.

On a one-shift operation, International Steel expects a return of $350,000 in savings from its new line, or a 1½ year payoff. It eliminates layout crews, shop drawings, templates, positioning time, paint spotting, and center punching.

And the line will do the same amount of work originally handled by six saws, six cranes, four vertical drills, and four horizontal drills. Some of the equipment the company's retaining is being turned over to other types of work.



FLANGE DRILLING: Separate controls for each spindle permit drilling of both flanges at once. Drill center accuracy is 0.015 in.

Cut to Length—The first station in the line is a cold saw. It takes a trimming cut from the head end of the workpiece. The saw operator sets the required length from a simple, numbered work sheet.

The structural is then fed across the saw table at speeds up to a cracking 60 fpm. As soon as it reaches the current length, two centering vises clamp the workpiece. Then the saw cuts the beam to the correct length.

Second Station — The cut-to-length beams are fed onto a direct line to one of two drills in the second station, either a 12-spindle horizontal or a 6-spindle vertical drill. At the touch of a button, powered feed rollers deliver the cut structural either to station, standby skids, or straight to the assembly bay.

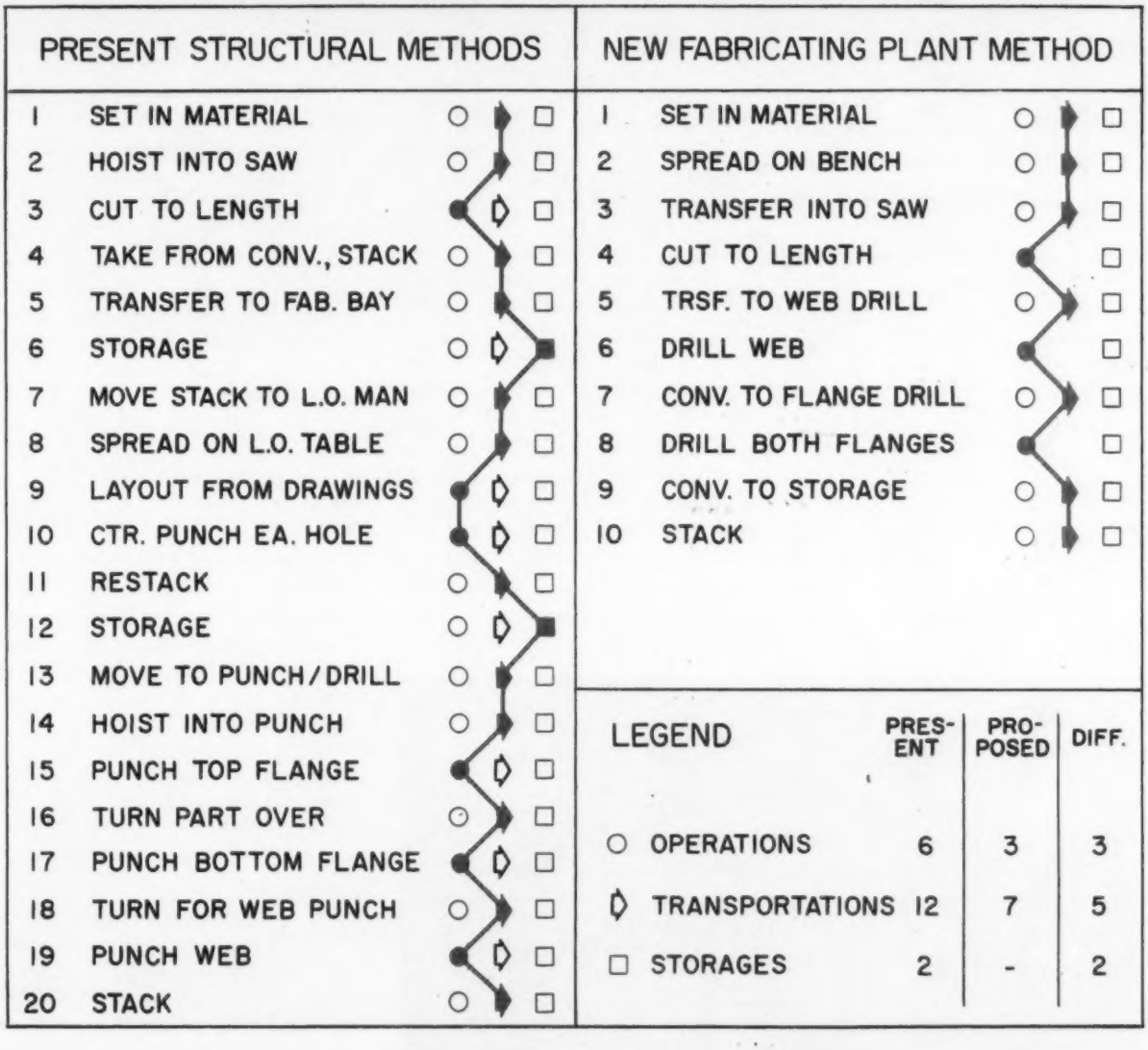
To speed the presses and to insure delivery of an oxide-free structural to this automatic line, International Steel has placed a Wheelabrator cleaning unit just ahead of the saw station.

The unit gives the structural a high-speed cleaning before cutting. This makes it possible to bring steel from yard storage direct to the fabricating floor in a matter of minutes.

No Drawings — All operations are performed without drawings. The three machine operators and the crane men are guided by work sheets which give dimensions in numerical form. And push-button machine settings enable the line to handle any size workpiece in any order of succession.

For instance, the line can switch operations from a 10-ft to a 50-ft workpiece without any delay. At

New Method Streamlines I-Beam Fabrication



least eight clamped structurals can be fed into the machine as a single workpiece.

Versatile—It's been an old complaint that structural fabrication could never be made automatic, because no machine would be versatile enough to handle any variety of workpieces. But this setup isn't fussy. It handles channels, rounds, angles, pipe and even wide-flange beams.

Developed by Boulton & Paul Ltd., Norwich, England, this line seems to solve the problem. International Steel's machine will accommodate wide-flange beams 30⅜ in. deep x 15 x ⅛ in. wide. And it has taken columns 18¾ in. deep x 16 x ¼ in. wide.

Space Factor — Because of its standby tables between stations, the machine covers a fair amount of work space, though certainly not a prohibitive amount for a structural fabricating shop. In fact, the entire setup at the Evansville plant occupies about 250 x 75 ft of floor space.

At present it's the only installation in the United States. However, there is one in Canada at Dominion Bridge. Several other American fabricators have ordered similar lines while others are studying the utility of the equipment.

Another Time-Saver — The shot cleaning, as a time-saver, is something worth mentioning. In addition to eliminating acid pickling, the unit can cut cleaning time from 50 to 7 minutes.

Due to the cleaned surface, welding speeds increase up to 35 pct in lineal feet of weld per man per day. Wheelabrator units are already in use in many conventional structural fabricating shops, but should be a particular boon in the high-speed setup at International Steel.

Covers on Hot Tops Save Steel

Many steel mills have raised yields 1½ pct by capping their hot tops with custom-made covers, improving ingot quality too.

▪ When seven major steel mills start using a new packaged cover for their hot-top ingots, you can look for a good explanation. In this case, it's a decision of common sense.

In using the new covers the mills not only boost their yields by 1½ pct, but improve their ingot center quality as well. In fact, it's already been used on 1.3 million tons of killed steel ingots.

Made by Ferro Engineering Div. of Oglebay Norton Co. in Cleveland, each of these C & D hot-top covers is designed to fit snugly in the ingot mold and hot top in question. Also each one is packaged inside a heavy cardboard container.

Triple Layer—The top layer contains insulating material to prevent heat from escaping through the hot-top opening. Next comes a steel separator plate which holds the top layer in position throughout the entire solidification period.

As soon as the paper container burns away, the bottom layers, composed of non-carbonaceous exothermic material, drops down into the sink-head metal. From the combustion that follows, enough heat is added to keep the metal molten. Combined with the heat that's retained by the lid of insulating material, a prolonged liquid state is maintained.

All that's needed to place the cover on the hot top is a long-handled fork. But it's important to remember to get it in position right after the metal's been poured.

Better Yield—How does all this increase the yield? For one thing, less metal is used in the hot top for proper feeding of the ingot body. Also the retained and generated heats keep the metal in the hot top molten long enough to cause a more efficient feed.

There's a flatter, thinner walled cavity after solidification too. And this all adds up to a greater feed of sinkhead metal down into the ingot body, satisfying shrinkage.

See for Yourself—Results from several case histories underscore the cover's effectiveness. By using the new cover, one setup reports a reduction in sinkhead weight from 1300 to 1170 lb on a 7120-lb ingot body. And that meant that the volume of metal poured into the big-end-up hot top was only 14 pct the total ingot's weight, as compared to 15½ pct when a 6-lb bag of exothermic material was used.

The same 1½ pct saving in the amount of steel poured was realized when low-volume hot tops were used. This time the figure fell from 11½ to 10 pct.

More Accurate—Previous methods for improving yield were haphazard. It was either a case of shoveling in loose or bagged heating materials or pouring more metal into the hot tops. The latter method naturally decreased the yield. The covers insure exact amounts.

A good point to bear in mind is the cover's value when used with high-priced stainless or alloy steels. No cover's more than a few dollars.

EASY HANDLING: A long-handled fork inserted through slits on the top of the container eases job of placing cover inside the hot top.

Kaiser Aluminum doubles capacity with new Bliss hydraulics

Unusual control system provides broad job shop work range in both hand and closed die forging ... This 8,000-ton Bliss Hydro-Dynamic* press, together with similar 3,000-ton and 5,000-ton presses, are the key units in the recently completed $5 million press department at Kaiser Aluminum & Chemical Corporation's Erie, Pa., plant. The presses have doubled Kaiser Aluminum's capacity to produce a broad range of aluminum forgings for commercial applications, as well as for aircraft and missile components.

In spite of their size, the presses have unusual flexibility: the multiple cylinder design of the two larger units and novel automatic control systems provide precise, stroke-after-stroke regularity of forging speed and pressure.

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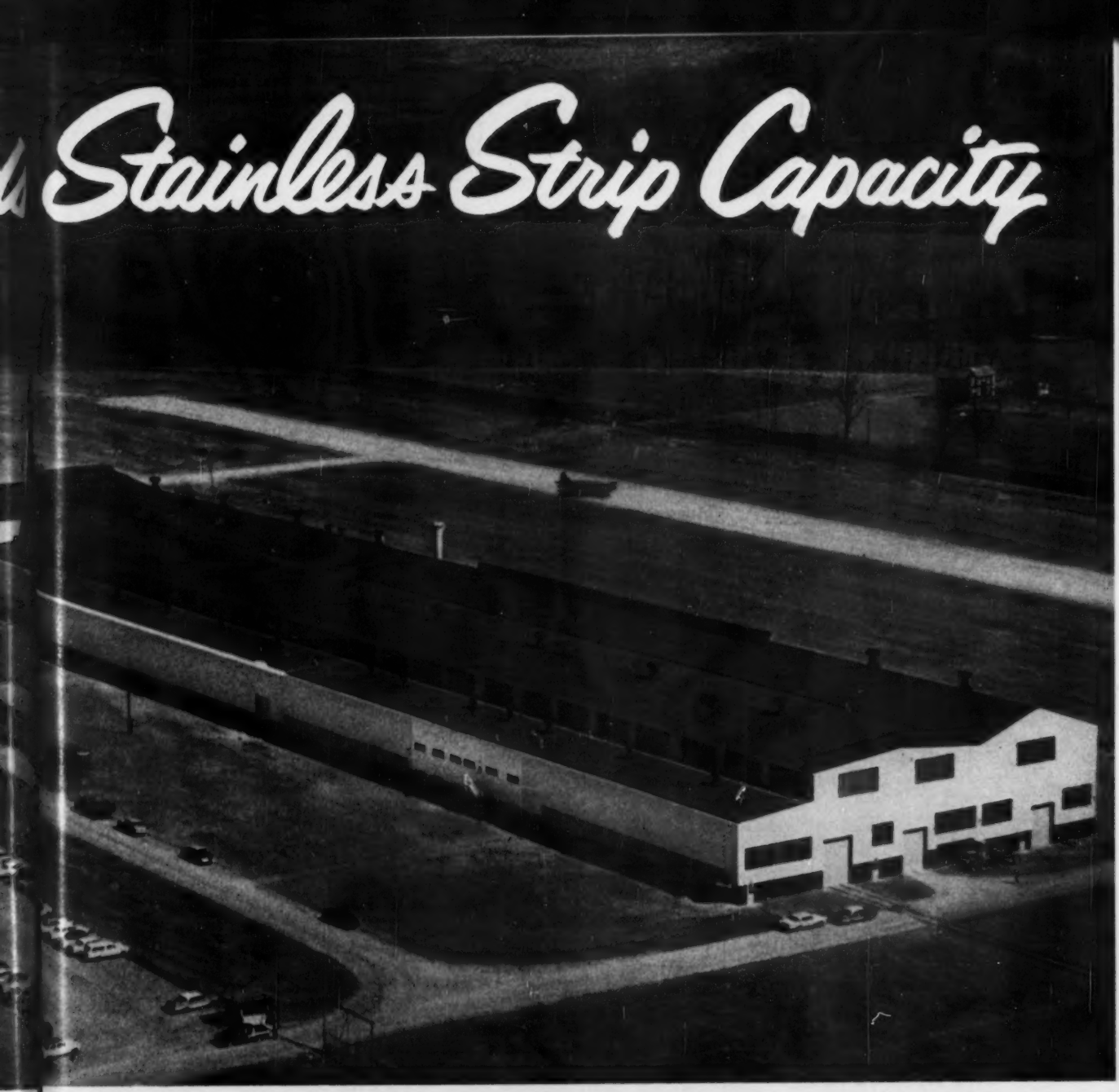
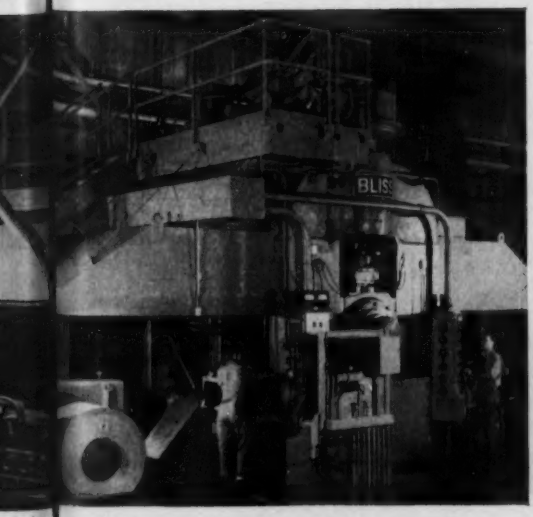
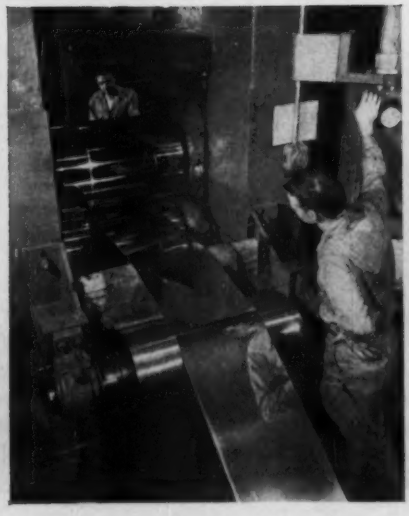




Modern four-high cold rolling mill.



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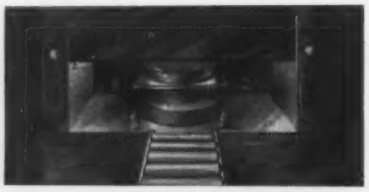

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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 101.

Safety Test

A Safety Index Test to discover in advance the accident-causing "injury repeater" is described in an eight-page brochure. (Executive Assets, Inc.)

For free copy circle No. 1 on postcard, p. 101

Handling Equipment

Specification sheets describe several new models of lift truck, and a catalog describes features and accessories of the manufacturer's line of lift trucks. (Allis-Chalmers)

For free copy circle No. 2 on postcard, p. 101

Electrode Chart

A wall chart lists 25 items of comparative information on more than 130 of the most commonly used welding electrodes, including 69 types supplied by the author of the chart. (National Cylinder Gas Div., Chemetron Corp.)

For free copy circle No. 3 on postcard, p. 101

Thread Engagement

"Lead Deviation as It Applies to Long Thread Engagement" is a four-page supplement to a previous pamphlet on lead error. It presents theory and charts to show how much screw thread pitch diameter tolerance is consumed by increasing lengths of thread engagement. It also points out that minimum-lead-error fasteners for use in critical fit applications are available. (Standard Pressed Steel Co.)

For free copy circle No. 4 on postcard, p. 101

Spring Steels

A catalog provides physical data for users of cold-rolled high-carbon flat spring steels, a conversion chart, tables, and illustrations of typical end products. (Athenia Steel Div., National-Standard Co.)

For free copy circle No. 5 on postcard, p. 101

Sinter-Seal Process

A specially compounded thermosetting resin, impregnated under vacuum into the pores of powdered-metal parts, when cured becomes a hard, insoluble mass that seals the parts pressure-tight and non-absorbing, thus overcoming undesirable porosity. The process is described in a four-page brochure. (National Sinter-Seal Co.)

For free copy circle No. 6 on postcard, p. 101

½-Ton Coffing Hoist

A ½-ton, aluminum spur gear Coffing Hoist weighing only 22 lb has long life and several desirable operational features. It is described in a bulletin. (Coffing Hoist Div., Duff-Norton Co.)

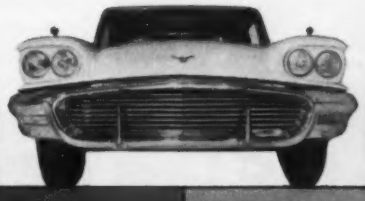
For free copy circle No. 7 on postcard, p. 101

Rust Retardant

A clear, dark brown oil, self-emulsifying, is suitable for protection of ferrous metals, including bare surfaces, zinc or iron phosphated, and black oxide finishes. It is de-

.....Today the proudest cars on the road glisten with Olin Aluminum

The exciting Ford Thunderbird is an example. Quality Olin Aluminum is going into the manufacture of most of the fine new cars. Bright, light aluminum resists corrosion, won't rust. No other metal gives car owners such lasting satisfaction. Olin Aluminum, in its first year as a major producer, is already a basic source of supply for the great names in the automotive industry.



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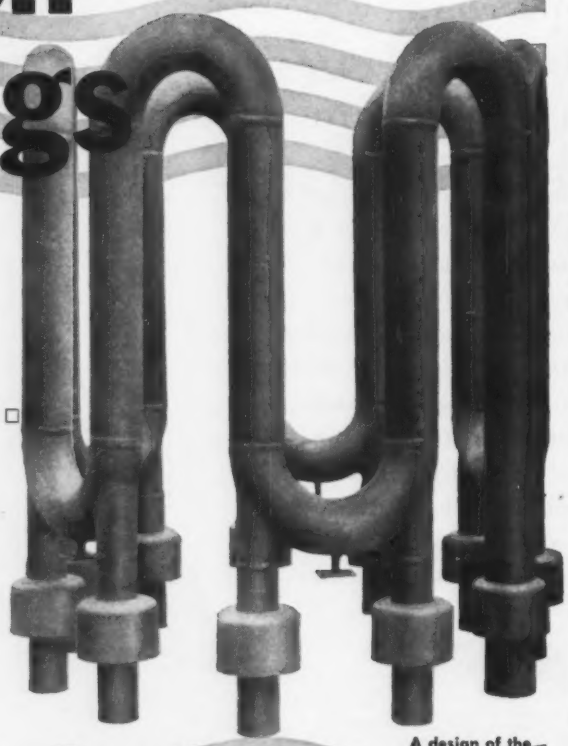
OLIN MATHIESON • METALS DIVISION • 400 PARK AVE., N. Y.

when things are HOT... call on Duraloy



A design of the A. F. Holden Co., Detroit, Mich.

Castings that Keep their Load-Carrying Strength at High Temperatures

This "immersion type radiant heater" is typical of the high reliability castings turned out by DURALOY. Centrifugally cast tubes with *UNIFORM* wall thickness...for longest service life. Static cast collars and shell molded bends...typical of DURALOY versatility.

For your high alloy casting requirements check with DURALOY... our long experience, ultra-modern foundry and up-to-the-minute test equipment will be helpful in solving your problems. For more information ask for Bulletin No. 3150 G.

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OFFICE AND PLANT: Scottdale, Pa.
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ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

FREE LITERATURE

scribed in a two-page data sheet. (MacDermid Inc.)
For free copy circle No. 8 on postcard, p. 101

Welding in Design

"Design Ideas No. 22" gives some examples of the application of welded-steel construction to the design of machine brackets, to save materials costs in comparison with using cast-iron castings. (The Lincoln Electric Co.)
For free copy circle No. 9 on postcard, p. 101

Heating for Heading

General information and case histories concerning the application of a line of resistance heating units to heat wire stock for heading operations are presented in a four-page brochure. Both production and tool life were immensely increased, and better finished results were obtained. (The Herscott Co., Inc.)
For free copy circle No. 10 on postcard, p. 101

Toolmakers' Vises

Two new all-ground vises for precision grinding and other jobs are accurate to 0.0005 in. on all sides. Made of high-grade gray iron, they have removable ground steel jaw plates. They are described in a catalog. (Palmgren Steel Products)
For free copy circle No. 11 on postcard, p. 101

Prototype Parts

A brochure describes the cost and time advantages of using prototype parts of the author company's manufacture for purposes of test, display, etc., wherever parts of rubber-type materials are used. The parts maintain all required tolerances. (Minnesota Rubber Co.)
For free copy circle No. 12 on postcard, p. 101

Power Quill

A precision power quill for mass-production of small electrical and electronic parts is covered in descriptive data. With a ¾-hp motor and collet capacity of ⅜ in., it offers load speeds from 15,000 to

35,000 rpm and precision to within 0.0001 in. Many valuable features are built in. (Precise Products Corp.)
For free copy circle No. 13 on postcard, p. 101

Vacuum Cleaners

A four-page bulletin covers a line of vacuum-cleaning equipment, including its diverse uses and many attachments. (Clements Mfg. Co.)
For free copy circle No. 14 on postcard, p. 101

Aluminas

A brochure describes properties, characteristics, and uses for a line of alumina products. (Kaiser Aluminum & Chemical Corp.)
For free copy circle No. 15 on postcard, p. 101

Hopkins Process

An eight-page brochure describes relative merits of material produced by the Hopkins Process, a new melting process for producing high-purity metals. (Firth Sterling Inc.)
For free copy circle No. 16 on postcard, p. 101

Switching Components

Switching and control components for all phases of electromagnetic control are described in supplementary sheets for the manufacturer's Catalog 57-S. (Automatic Switch Co.)
For free copy circle No. 17 on postcard, p. 101

Refractory Materials

Tungsten and molybdenum crucibles for high-temperature research and other uses, and a high-density, high-purity tungsten alloy for high-density uses, are described in a four-page brochure. (Kulite Tungsten Co.)
For free copy circle No. 18 on postcard, p. 101

Magnetic Separator

A catalog provides descriptive information, specifications, and application tables on a high-power crossbelt magnetic separator. New design features insure maximum magnetic flux concentration. Various sizes are available. (Magnetic Engineering & Mfg. Co.)
For free copy circle No. 19 on postcard, p. 101

IN CLAY GUN PERFORMANCE...

THE LEADER BY FAR IS BAILEY

Extremely accurate and fast positioning, Bailey Clay Guns furnish the high clay pressures (642 to 1150 psi) which are so necessary with the new coke-tar tapping hole mixes now being used on many furnaces. Unique mounting and 3-motor operating system assure quick and reliable positioning in the tapping hole. There are more than 170 Bailey Clay Guns in blast and electric furnace service.

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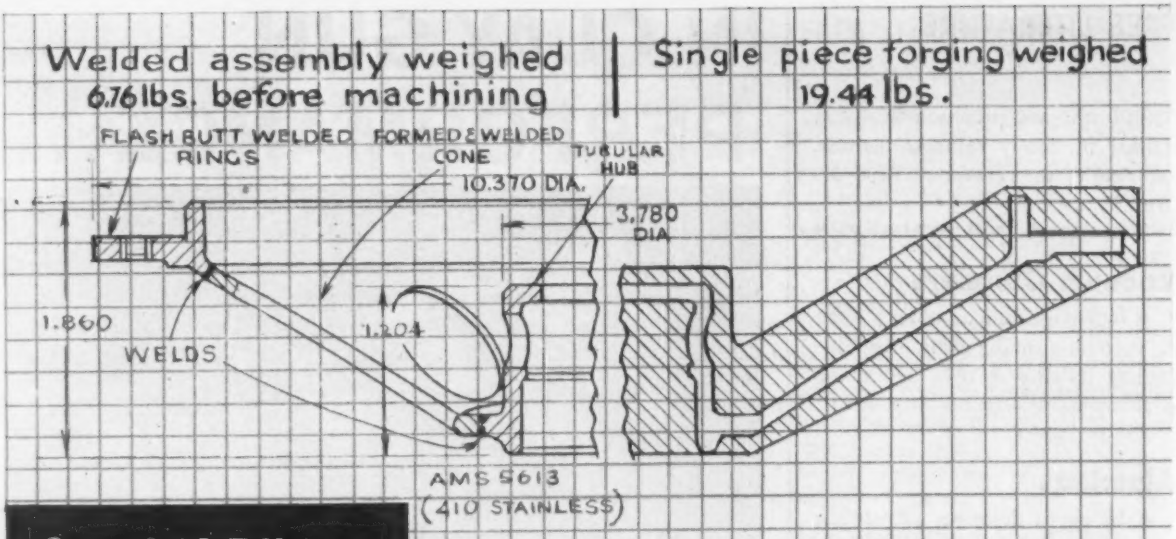

Cost of Jet Engine Component Reduced $31.21 by Flash Butt-Welded Ring Assembly

Visualizing this jet engine assembly as three simple parts, instead of a single complicated piece, was the first step in reducing its cost.

By circumferential welding, a flash butt-welded ring, a formed and welded cone, and a tubular hub were joined together. Material required was reduced 65% and hours of machining were eliminated on each piece.

This fabricating know-how has helped many companies cut the cost of circular parts and components, particularly where high-strength, high-temperature alloys are involved.

On prototype and production runs, Amweld's subcontracting service includes the assistance of experienced engineers and metallurgists. Send us prints and specifications . . . we will be happy to study your problem and perhaps suggest ways that fabrication by welding can help you reduce costs.

GET THE FACTS ABOUT AMERICAN WELDING

Complete information. Facilities brochure, Precision Assemblies Catalog, and booklet on "How Flash Butt-Welded Rings are Made."

THE AMERICAN WELDING & MFG. CO. • 120 DIETZ ROAD • WARREN, OHIO

AMERICAN WELDING

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Speed Reducers

A four-page brochure details a new line of self-cooling, fin- and fan-equipped speed reducers. They feature up to 80 pct greater capacity than comparable non-ventilated models. Capacities range from fractional through 18 hp. (The Ohio Gear Co.)

For free copy circle No. 20 on postcard

Pressure-Gage Standard

A free-floating, piston-type gage, highly accurate for use as a standard for absolute and gage calibration of secondary pressure standards and pressure - measuring devices, is fully described in a four-page bulletin. (Consolidated Electrodynamics Corp.)

For free copy circle No. 21 on postcard

Industrial Batteries

A 48-page general service manual details the operation, maintenance, charging, troubleshooting, and repair of a line of industrial batteries. (C & D Batteries, Inc.)

For free copy circle No. 22 on postcard

Indicating Controllers

A four-page bulletin covers a line of electronic self-balancing indicators and indicating controllers. They indicate and process variables convertible to an electrical quantity, and may be connected to multipoint switches to check up to several hundred sensing elements. They can be provided with 2- or 3-position control, or up to 6 alarm contacts. (Thermo Eleetric Co., Inc.)

For free copy circle No. 23 on postcard

Copper-Base Alloys

A folder on copper, brass, and bronze alloys is designed to assist in selection of these alloys for particular products and processes to effect cost savings. Complete data are included on a line of these alloys, available in all common forms. (Bridgeport Brass Co.)

For free copy circle No. 24 on postcard

Air Hose

A bulletin gives complete specification data on a line of air hose and an accompanying special line of fittings. (Synflex Products Div., Samuel Moore & Co.)

For free copy circle No. 25 on postcard

High-Temp Lubricants

A folder describes a complete line of industrial lubricants, one of which is serviceable to 1800°F. It uses colloidal graphite in carriers which evaporate in the heat zone without leaving harmful residue. (Kano Laboratories)

For free copy circle No. 26 on postcard

Compressor Controls

Control systems for completely automatic operation and protection of gas-engine and electric compressors are described in a brochure. (Ingersoll-Rand Co.)

For free copy circle No. 27 on postcard

Steel Casting Uses

A product design study features the advantages obtained by using steel castings for five different oil-well-drilling and gas-field components. (Steel Founders' Society of America)

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Color Process

A process for applying color to certain nonferrous metals is described in a fact sheet. A wide range of colors is available. Full application data are included. (Conversion

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 8/6/59

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FREE LITERATURE

Chemical Corp.)

For free copy circle No. 29 on postcard

Slitting Lines

"Slitting Lines for Coils and Sheets," a 76-page brochure, contains basic information on design, selection, and operation of slitters and slitting lines and auxiliary equipment. Specifications on a line of such equipment are included. (The Yoder Co.)

For free copy circle No. 30 on postcard

Portable Hoists

A large folder illustrates a line of portable electric hoists, redesigned as pushbutton models. Capacities vary from 250 to 4000 lb. Many new safety and mechanical features are incorporated. (Manning, Maxwell & Moore, Inc., Shaw-Box Crane & Hoist Div.)

For free copy circle No. 31 on postcard

Tracer Turning Tools

A four-page illustrated booklet describes a standardized line of tracer turning tools using standard 55° diamond-shaped throwaway carbide inserts. Uses are illustrated, and complete specifications are included. (Wesson Co.)

For free copy circle No. 32 on postcard

Cyclone Separators

Data and information on dust control with a line of cyclone separators are available in information sheets. (Torit Mfg. Co.)

For free copy circle No. 33 on postcard

Conversion Table

A table for conversion of inches and fractions thereof into decimal parts of a foot is offered. (Tubular Products Div., The Babcock & Wilcox Co.)

For free copy circle No. 34 on postcard

Self-Propelled Crane

Literature describes a 10-ton-capacity self-propelled crane, featuring excellent maneuverability and a hydraulically telescoping boom. (Austin-Western Div., Baldwin-Lima-Hamilton Corp.)

For free copy circle No. 35 on postcard

Glass-Jet Peening

A 16-page technical review describes a new process of glass-jet peening that uses pure minute glass beads in a slurry solution that not only cold-works, stress-relieves, and increases fatigue life of metals, but also cleans and improves surfaces down to 4-microinch finish. (Perfecto-Peen, Div. of Aero-Test Equipment Co.)

For free copy circle No. 36 on postcard

Forklift Line

A booklet entitled "Docker Facts and Factors" shows the place for the stand-up, end-control truck in modern material-handling systems. (Automatic Transportation Co.)

For free copy circle No. 37 on postcard

Threading Lathe

An eight-page catalog describes the Cri-Dan Model "B" high-speed semiautomatic, single-point threading lathe. Easily set up and operated, it can generate all types of threads. (Gisholt Machine Co.)

For free copy circle No. 38 on postcard

Material Handling

A 16-page catalog describes and illustrates a complete line of material-handling trucks of all types. (Lewis-Shepard Products, Inc.)

For free copy circle No. 39 on postcard

Vacuum Power Pack

A compact and powerful pump-motor unit delivering 50 cfm free air and vacuum to 28 in. Hg is described in a catalog. (Vac-U-Lift Co.)

For free copy circle No. 40 on postcard

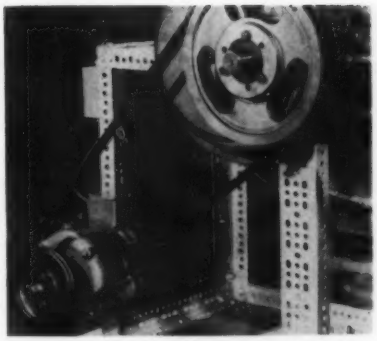
Bronze Gate Valves

A two-page circular illustrates a complete line of bronze gate valves, in ¼- to 3-in. sizes, with screwed, solder, or flange ends. (Lunkenheimer Co.)

For free copy circle No. 41 on postcard

New Materials and Components

Compact V-Belt Drives Improve Design



New compact V-belt drives use improved V-belts with reduced cross-sectional areas that permit transmission of more power in the same area, or use of fewer belts, narrower sheaves, and smaller center distances to transmit the same amount of power. Cross-sections of different widths and different numbers of V's cover a range to 1500 hp. The narrower, lighter sheaves reduce shaft overhang and bearing loads, increasing bearing life. The sheaves use interchangeable, quick-disconnect split bushings for easy maintenance. The units can handle ratios up to 8.55 to 1, with rim speeds to 6000 fpm. (The American Pulley Co.)

For more data circle No. 42 on postcard, p. 101

Rods Screen Sticky Ores Without Clogging

Loose-rod deck to screen moist, sticky ores without clogging is available for new and existing vibrating screens. Composed of free-rolling loose rods which rotate as they vibrate, the deck greatly increases ore flow, and reduces fuel costs. Rotating opposite to the direction of the vibrating mechanism, at right angles to material flow, and held in place and accurately spaced by steel spacers, the rods achieve the finer particle size which has as much as tripled blast-furnace output, lowered fuel requirements, and eased chemical reduction. (Allis-Chalmers)

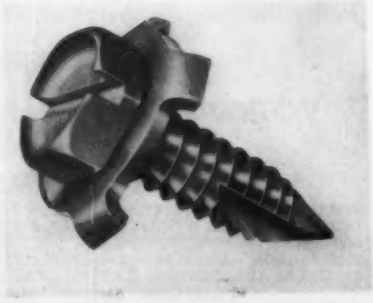
For more data circle No. 43 on postcard, p. 101

Barrel Media Cuts Fast, Fine, Protects Work

Thanks to a new media, many zinc diecastings can now be barrel-finished and take a plate comparable to that of a hand-buffed piece. It offers fast cutdown, produces low-microinch finish, and protects workpieces against surface damage. Abrasive fineness produces a finish so fine that hand buffing is often eliminated in pre-plating finishing. Light weight of the media prevents surface damage to pieces, and it will not fracture and lodge in pieces. (Minnesota Mining and Mfg. Co.)

For more data circle No. 44 on postcard, p. 101

Screw Reams, Self-Threads, Grounds Terminals



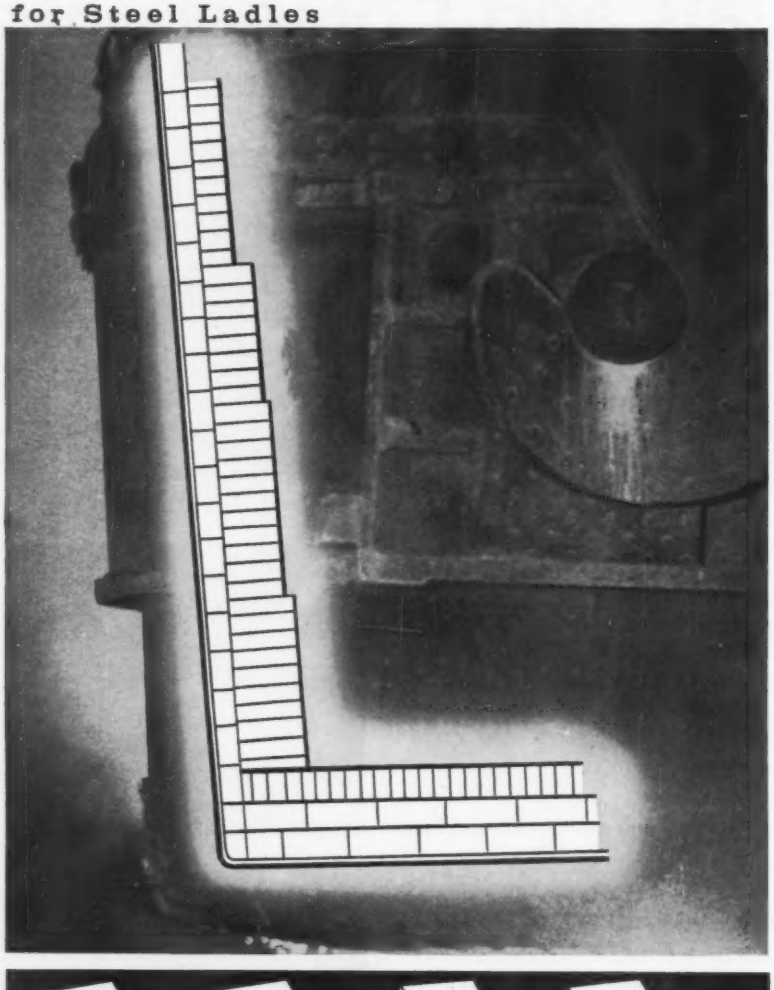
A triple-purpose grounding terminal screw is designed for use in construction of appliances requiring electrical grounding protection. A reaming point removes enamel or paint on the way into the hole, eliminating a separate reaming operation. It cuts its own threads in the panel metal, insuring a good connection. Its tab washer retains the wire loop firmly for maximum conductivity. The screw is #10-24, ⅝ in. long, with a 5/16-in. slotted hexagon head that fits either a screwdriver or a socket wrench. (Shakeproof Div., Illinois Tool Works)

For more data circle No. 45 on postcard, p. 101

DANDO

CHORD BRICK LININGS

for Steel Ladles



over 8,000 tons of steel before relining

That's the kind of record DANDO Chord Brick are making. And this tonnage is matched by an economical first cost. These same price and performance factors will give *you* a lower ladle cost per ton of steel.

Why not investigate DANDO Chord Brick Linings for your ladles? Write *McLain Works, Refractories Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.*

REFRACTORIES PORTER DIVISION

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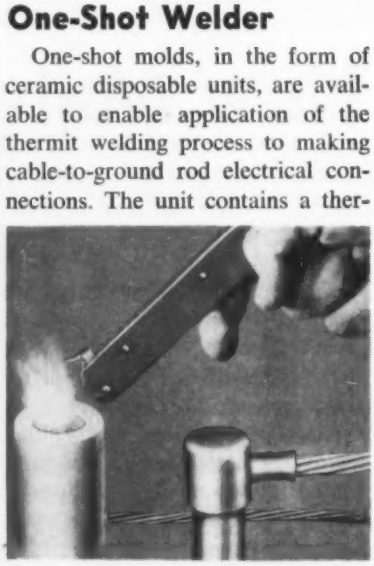
DESIGN DIGEST

One-Shot Welder

One-shot molds, in the form of ceramic disposable units, are available to enable application of the thermit welding process to making cable-to-ground rod electrical connections. The unit contains a thermit powder cartridge, a metal disk, a wrap seal, and a ferruled sleeve —all that is needed to make connections with 100-pct current-carrying capacity, which cannot loosen or corrode. (Erico Products, Inc.)



For more data circle No. 46 on postcard, p. 101

Aluminum-Bronze Dies

A new aluminum-bronze alloy has been developed for forming and drawing dies for stainless and mild steel. Complete stocks of die blanks include centrifugally-cast rings, as-cast rounds, and rectangular bars. The alloy offers great toughness, impact-resistance, and hardness, and has improved machinability and resistance to wear and abrasion. (Ampco Metal, Inc.)

For more data circle No. 47 on postcard, p. 101

Electrolytic Crystals

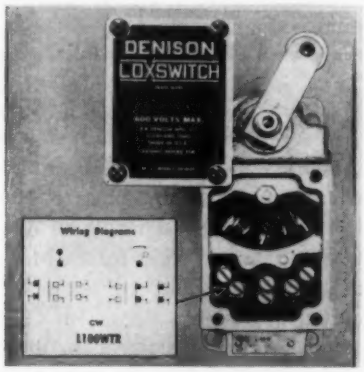
Production of radically new and different alloys is made possible by the new availability of electrolytic titanium and chromium crystals. Hot-rolled, high-strength, thermally stable alloys of EP titanium with 8 to 10 pct manganese or chromium, for instance, can now be produced. Also, 90 Ti 10 Cr can now be made by conventional melting procedures. Various such alloys can now be hot-rolled with satisfactory ductility. Test quantities of the

metal crystals and the alloys are available. (Manganese Chemicals Corp.)

For more data circle No. 48 on postcard, p. 101

Three-Circuit Switch

A three-circuit limit switch permits many unusual circuit arrangements and saves in switches, wiring, and costs. It can be used, for instance, in safety interlock systems to tie together two or three functions, or to control a motor and simultaneously start or stop a timer or other control. It has found uses in transfer machines, to permit continued operation of downstream stations when an upstream station



stops. Two models are available for different uses, both with two normally open and one normally closed circuit. (R. B. Denison Mfg. Co.)

For more data circle No. 49 on postcard, p. 101

NEW BOOK

"Machinability Manual Number One for Turning—Facing—Boring Operations," by J. A. Hedrick, contains machinability ratings of common metals, and two circular calculators, for computations concerning metal removal with HSS or carbide tools. It furnishes speeds and feeds for different types of materials and cuts, converts sfpm into rpm and vice versa, and provides machine cut times, pieces per hour, and hp required. 35 pp. $15 per copy, less in quantity. John A. Hedrick, Box 143, Parkerford, Pa.

The only one of its kind in the country...

SEE THE DIFFERENCE
New 1000-lb. coil is neatly wound for maximum efficiency.

RIVERSIDE-ALLOY'S CONTINUOUS CASTING PROCESS PREVENTS POROSITY... SLASHES RELOADING TIME

Since phosphor bronze is one of the most difficult non-ferrous alloys to make satisfactorily into wire, how does Riverside keep so far ahead of competition? Here's one of the reasons: *Continuous casting*, a radical new and secret process, exclusive in America at Riverside-Alloy.

A special method of continuous casting eliminates the porosity of wire cast in water-cooled molds . . . brings you weld-free wire in coils up to 1000 lbs.

SPEED. With this new large coil your production runs are longer than ever before. Riverside wire speeds and smooths your fabrication and scheduling.

QUALITY. Riverside *continuous-cast* material is denser, more homogeneous than antiquated mold-cast products. Wire drawn from the continuous coil is stronger, free from weak spots which can stop production and cause high reject rates.

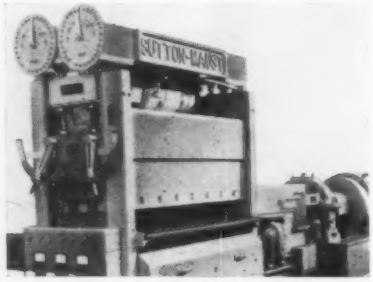
Your production equipment can be easily adapted to hold the new 1000-lb. coils of Riverside continuous-cast bronze wire. Find out how you can save with this remarkable new process. Write *Riverside-Alloy Metal Division, H. K. Porter Company, Inc., Riverside, N. J.*

RIVERSIDE-ALLOY PORTER METAL DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY de MEXICO, S. A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

New Equipment and Machinery



Precision-Flattens Any Type Sheet Stock

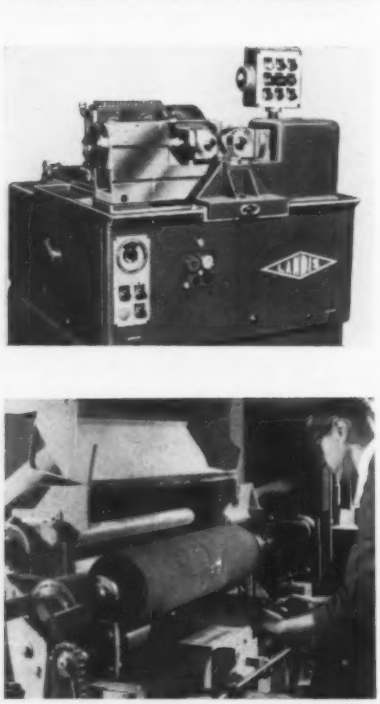
A line of roller levelers for precision flattening and correcting ferrous and nonferrous sheets and strip includes sizes for any width in gages from 0.001 to 0.750 in. A double-tilt, backed-up roll arrangement provides superior flatness and correction in process lines, tension leveling, or cutting lines. The entry rolls subject material to increasing waves, with the central rolls producing maximum correction, and the exit group completing the process. (Sutton Engineering Co.)

For more data circle No. 50 on postcard, p. 101

Rolls Threads by Infeed or Thrufeed

A small-range thread-rolling machine handles diameters up to 2 in. with infeed rolling and up to ¾ in. with thrufeed rolling. Pneumatically or hydraulically operated, it has infinite speed adjustment from 166 to 500 rpm, enabling easy use of the most efficient speed. It uses two cylindrical thread-roll dies on inclinable holders adjustable to 10° left or right hand to handle all AN, UN, and Acme thread forms. Manual, semi-automatic, or automatic cycling is available, along with a full complement of equipment for thrufeed rolling. (Landis Machine Co.)

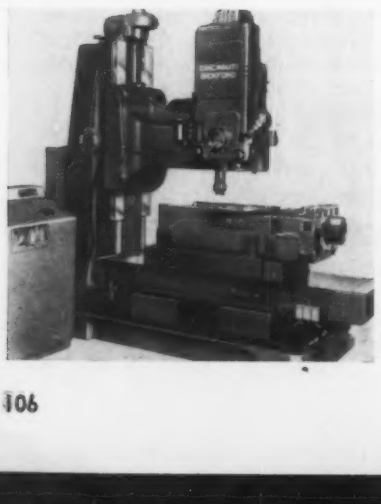
For more data circle No. 51 on postcard, p. 101



Nylon-Abrasive Wheels Polish Gently

Still under test in plants, wheels of non-woven nylon fiber with abrasive throughout appear to offer great promise in many finishing and polishing jobs. Having a gentle action, they seem best suited to cleaning, development of surface patterns, and creating matte finishes, as well as polishing sheet, blending welds, and producing satin finishes. In normal diameters up to 60 in. wide, wheels have a grit range from 100 to 600. Cool operation results from low speed, slight pressure, and wheel oscillation. Test results are available. (Behr-Manning Co.)

For more data circle No. 52 on postcard, p. 101



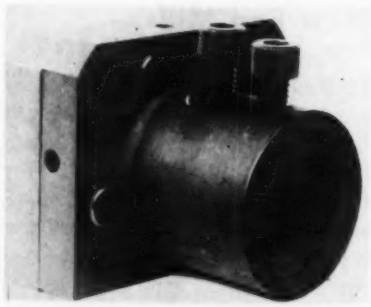
Fast, Accurate, Heavy-Duty Positioning Table

A positioning table features low cost and operating convenience. Operated by punched tape, it positions up to 5 tons of work for machining operations or layout at speeds of 360 ipm, accurate to ±0.001 in., repetitive to ±0.0005 in. The table is 38 x 50 in., and travels 32 x 44 in., operating fast, since both rapid traverse and final positioning occur simultaneously. Console indicators provide exact numerical readouts, permitting the operator to verify positions. Ball screw drive, hardened ways, and roller-bearing mountings insure trouble-free and frictionless operation. Drive has low backlash, increasing accuracy. (Cincinnati-Bickford Div., Giddings & Lewis Machine Tool Co.)

For more data circle No. 53 on postcard, p. 101

Adjustable Tool Holders

A line is available of completely adjustable flanged turret-lathe tool holders. The base is centered on the face of the turret by a short pilot and bolted on, and the adjustable member is aligned with the spindle by four small adjusting

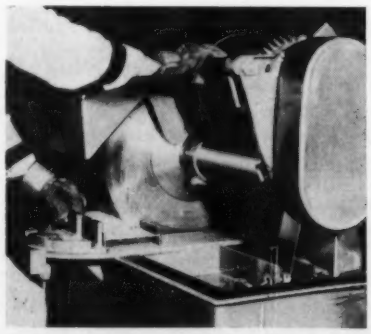


screws and then locked to the base. Equivalent in length to the Warner & Swasey "short length" tool holders, they are available for Warner & Swasey machines No. 3, 4, 5, and 6, and will also fit comparable sizes of Gisholt, Jones & Lamson, and other popular turret lathes. (Gahr Machine Co.)

For more data circle No. 54 on postcard, p. 101

Super-Speed Saw

Unique design of a new cutoff saw permits cutting all shapes and types of steel at great speeds without clamp-down, coolants, or loss of control. The combination of a special alloy saw blade and a precisely engineered cutting angle pro-



duces a semi-milling action, rather than the scraping or abrasion of more conventional units. A smooth, almost burr-free cut results, without any drag at all. The blade cuts so fast the stock cannot absorb heat to change temper. Cuts can be made with stock just lying on the table. Typical cutting speeds on mild steel are 1 second for a 2 x 2 x ¼-in. angle, and 3 seconds for a 1⅜-in. diam bar. (Production Machinery, Inc.)

For more data circle No. 55 on postcard, p. 101

Metric Taps

Standardized spiral-fluted metric taps are now being produced as stock items in all sizes and pitches for the first time in the United States. (Shearcut Tool Co.)

For more data circle No. 56 on postcard, p. 101

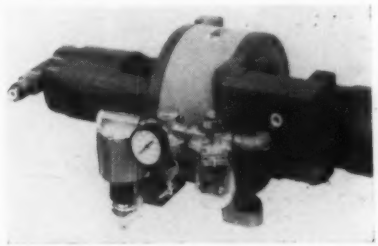
Works Tough Metals

The AGIETRON line of spark-erosion machines can machine the most difficult metals to meet formerly impractical shapes and slot designs, including titanium, molybdenum, tungsten carbide, and stellite. The line runs from ½ to 12 kw, and includes optical tables and equipment and rotary tables for polar-coordinate machining. Accuracies to 0.00015 in. are possible, with a 6- to 12-microinch finish. (Carl Hirschmann Co.)

For more data circle No. 57 on postcard, p. 101

Non-Hazardous Pump

Ideal for locations where electric power is not available or dangerous to use, an air-powered pump develops liquid pressures to 50,000 psi at temperatures to 500°F. It can han-



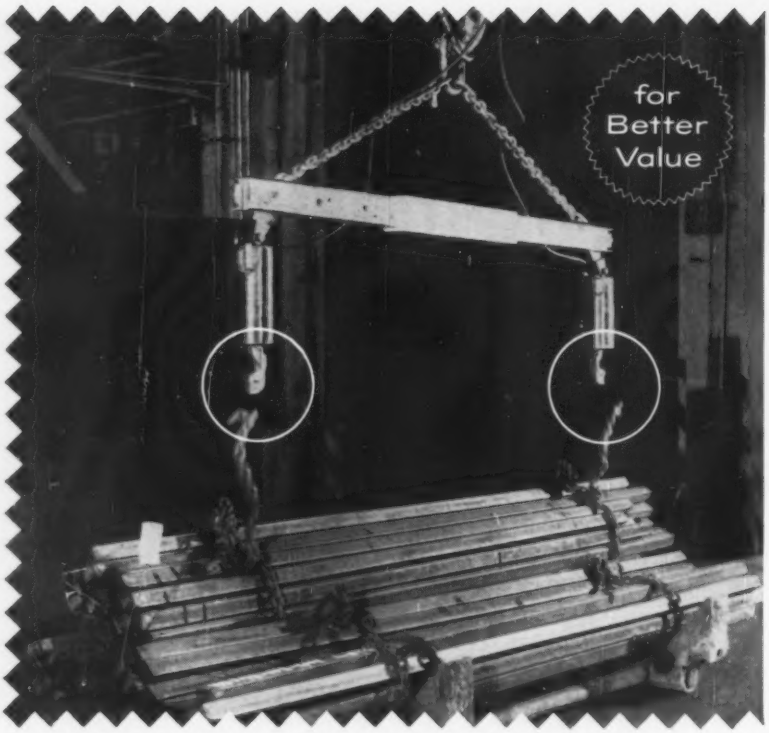
dle oil, water, or chemicals. Of duplex design, it has minimum discharge clearance volume for high-efficiency pumping. An automatic air-transfer valve to reverse pressure flow replaces conventional crank-arm action. Air pressure of 100 psi

Fine tools that encourage Good Work

ARMSTRONG WRENCHES

An ARMSTRONG Wrench feels right—is balanced. It goes over nuts or screw heads easily, grips firmly without sloppiness, won't round corners—because openings are carefully machined to correct sizes. It's safe, strong beyond need without clumsy bulk—because of superior design and selected steels, heat treated to proper degree of hardness and tensile strength. It's quality finished, ARMALOY (alloy steel) Wrenches in chrome plate with heads buffed; HI-TEN (carbon steel) Wrenches in baked-on gray enamel with heads ground bright . . . all plainly marked for size. All are uniformly excellent tools manufactured under strict quality control, by modern methods, with modern equipment in a modern tool plant . . . 1537 different industrial sizes and types —single wrenches, or sets in metal cases, boxes or rolls . . . each a quality tool. Armstrong Wrenches are "Fine tools that encourage good work."

ARMSTRONG BROS. TOOL CO. 5209 W. Armstrong Ave. Chicago 46, U.S.A.



Where's the Man in this picture?

HE'S AT SAFE DISTANCE RELEASING THIS LOAD BY PUSH BUTTON CONTROL!

• Think of it! Now you can release "tough-to-handle" loads safely and without help from a follow-up man with the new Acco Solenoid Chain Release. Truly a revolutionary development in material handling, the Acco Solenoid Chain Release is controlled by the crane operator from his cab. Simply by pushing a button, he activates solenoids on the end of a spreader bar which in turn expels the chain from the hooks and releases the load. What if the control button is pressed accidentally or the power fails while the load is in the air? Nothing will happen because load must be on the floor with tension removed from the chain before solenoids operate.

The Acco Solenoid Chain Release is the safe answer to many material handling jobs where conditions make it dangerous for a man to unhook the load. Placing bundles of steel billets in a cooling pit is but one job made far safer by this labor-saving equipment.

The Acco Solenoid Chain Release can be ordered now in single or double spreader bar models. Accoloy X-Weld 125 Chain is normally furnished with both models although other types of chain are available upon special request. Spreader bar is sturdy I-Beam steel. Individual solenoid units without the spreader bar are also available. For complete information write our York, Pa., office.

ACCO Registered

SLING CHAINS

American Chain Division · American Chain & Cable Company, Inc.

Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco

*Indicates Warehouse Stocks

NEW EQUIPMENT

suffices to operate it. Special packings are available for unusual chemical or temperature conditions. (American Instrument Co.)

For more data circle No. 58 on postcard, p. 101

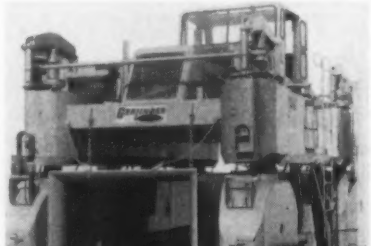
New End Mills

Four new end mill types have been added to a standard line. They are heavy-duty mills with 2, 4, or 6 flutes, and ball-end styles; 2-flute high spiral mills recommended for soft metals and titanium; 4-flute center-cutting mills also available with ball ends; and, for "tough-to-cut" metals, a center-cutting 4-flute premium-alloyed mill. (Illinois Tool Works.)

For more data circle No. 59 on postcard, p. 101

Transports Hot Ingots

A 30-ton-capacity material carrier is used by a leading steel producer to transport hot ingots and



plates. It is equipped with a special insulating load cover to protect driver and machine from heat. (Towmotor Corp.)

For more data circle No. 60 on postcard, p. 101

Carbide Boring Bar

For use in jig-borers and lathes, a boring bar features an extra wide carbide butt brazed to shank, lapped micro-finish, radial relief, and an accurately ground tough steel shank. It is furnished relieved for either ferrous or nonferrous materials. Sizes are available for ⅜- to 1-in. minimum hole diameters, with shanks ¼ to ¾ in., and overall lengths 2 to 6 in. (Jarvis Corp.)

For more data circle No. 61 on postcard, p. 101

The Iron Age Summary

Post-Strike Headaches Loom

As the strike lengthens, post-strike problems are compounded. Refractory damage increases with each day out of use.

Ore boat shutdown adds further problems. Each day out of service means equivalent of 1 5/7 days supply lost.

▪ Each day the steel strike stretches out, the longer it will take mills to get back into production after a settlement.

This is because damage to openhearth and blast furnaces increases with the length of time they are out of operation.

Ore Crisis—In addition, an ore crisis will be shaping up unless there is an early end to the negotiation stalemate. One steel plant indicated earlier that it would be in trouble if the strike went beyond Aug. 1. Other sources believe the entire industry will be pinched if the strike lasts two months.

Exceptions to the ore crisis are mills with direct access to foreign ores which can be shipped continuously to coastal ports while the Great Lakes are frozen.

Production Timetable — This timetable is suggested in estimating the lag in the industry's return to full operation after the strike ends:

One month strike: Two weeks before operations hit 85 pct.

Two months strike: Six weeks befor operations hit 85 pct.

For the first two weeks after a strike, shipments will be light. After that, they should match the ingot rate. In-process inventories were reduced some by heavy June shipments before the strike deadline, but most mills continued to feed steel into the pipelines right up to the shutdown. They should be able to move some steel shortly after a settlement.

Basic a Factor—One factor in favor of possibly improved recovery over past precedent is the greater use of basic brick in openhearth construction. New basic roofs have been installed on about 100 of the most modern openhearths in the industry. However, this remains a questionmark and some mills fear that the basic refractories may be even more vulnerable.

Mills will not know the extent of refractory damage until they start operations. Some of the older roofs will probably collapse when heat is applied. The general effect of a long shutdown on facilities was shown this year when mills began operating furnaces that had been idle a year or more. Repair crews could not keep up with roof work.

Blast furnaces present the same problem and damage to them will not be known until charging operations are under way.

Ore Losses—In ore, the strike duration will be critically important and could create a winter crisis. Lake boats, also manned by members of the Steelworkers union, are idle in port. Because of the short shipping season, the rule of thumb is that for each day lost to shipping, 1 5/7 days supply is lost.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	339	353	2,264	1,586
Ingot Index				
(1947-1949=100)	21.1	22.0	141.0	98.7
Operating Rates				
Chicago	5.0	5.0	89.5	68.0
Pittsburgh	3.0	3.0	80.0	52.0
Philadelphia	15.0	15.0	81.0	66.0
Valley	10.0	10.0	73.0	49.5
West	0.0	0.0	70.0	70.0
Cleveland	0.0	0.0	73.0	53.0
Detroit	24.0	24.0	82.0	65.0
Buffalo	0.0	0.0	105.0	51.0
South Ohio River	52.0	59.0*	89.0	41.0
South	9.0	12.0	85.0	54.5
Upper Ohio River	53.0	49.0	85.0	75.0
St. Louis	74.0	68.0*	83.0	83.0
Aggregate	12.0	12.5	80.0	58.8

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$39.83	$39.50	$39.17	$42.17
No. 2 bundles	$27.34	$27.00	$26.67	$29.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30.00	30.00	31.50	26.50
Lead, St. Louis	11.80	11.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	102.00	101.875*	103.00	95.875
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

PA's Are Advised to "Develop"

National Assn. of Purchasing Agents' officer tells PA's their standing with management is up to themselves.

He offers some tips on ways to gain stature.

▪ Purchasing agents' stature at the management table will depend more on their vision in meeting the expanding purchasing function, says, G. W. Howard Ahl, executive secretary-treasurer, National Assn. of Purchasing Agents.

"The purchasing executive who is content merely to do a competent job of buying is not developing his position or himself," warns Mr. Ahl. Management's heightened respect for the purchasing function will not be accompained by equal respect for purchasing people if they do not earn it.

G. W. Howard Ahl

Works Either Way — The new concept of "materials management," one executive responsible for all stages in materials flow, can be a boon to the purchasing agent or it can downgrade his position. Ultimately it will depend on how well he has been able to convince management of his understanding of a company's overall operations.

Constantly growing knowledge of a company, its products and industry is essential for a purchasing agent, says Ahl. Closely related to this learning process is intimate liaison with all other departments.

There is a danger that P.A.'s will feel checking with design and production is sufficient. But financial, legal and many other areas of corporate activity may be important influences on purchasing decisions. The wise executive strives always to see his company's operations as a whole.

Stay Informed — Information from outside sources about new products and processes is equally important, the NAPA officer adds. Competitor-watching should be an avid occupation for all purchasing agents. For example, if the competition switches to diecasting, the alert P.A. immediately starts boning up on the pros, cons and costs of diecasting without waiting to be told to buy a new material before learning anything about it.

This of course does not mean purchasing agents should become primarily materials and methods specialists, nor that they should attempt to usurp the proper functions of design and engineering. But top management is acutely aware that purchased goods and services account, on average, for 50 pct of the sales dollar. Management is increasingly insistent that this money be wisely spent.

Custom Fit Purchaser — Fortunately, points out Ahl, the field is flexible. There are no rigid qualifications for purchasing agents. Each can tailor his job and personal development closely to the needs of a given company. This very flexibility is one of the greatest advantages of purchasing today.

Sponge Iron Powders Stocked in Farwest

Hoeganaes Sponge Iron Corp., Riverton, N. J., has established new warehouse facilities in Vernon, Calif., for better service of the West Coast market.

With the new facilities, Hoeganaes iron powders are now available from the Los Angeles Transportation & Warehouse Co., at Vernon.

Ryerson for Reynolds

Joseph T. Ryerson & Son, Inc., San Francisco, has added Reynolds aluminum to the company's stocks at that city.

Products supplied include rod, bar, sheet, plate, structurals, pipe and other shapes.

Molybdenum Price Cut

Reduced prices for Climelt molybdenum products have been announced by Climax Molybdenum Co., division of American Metal Climax, Inc.

A FINE BALANCE OF AUTOMATION AND CRAFTSMANSHIP SHAPES HYATT'S SUPERIORITY!

Traditional skill and craftsmanship aided by modern electronic devices, accurate gauging and rigid quality control has made HYATT the recognized leader in cylindrical bearings. No matter how great the quantity, the same high quality is consistently maintained. *For maximum performance per bearing dollar, insist on . . .*

HYATT *HY-ROLL BEARINGS* FOR MODERN INDUSTRY

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

Available through United Motors System and its Independent Bearing Distributors

NO BEARINGS carry radial loads like cylindrical bearings . . .
and NOBODY knows them like HYATT

Are Fourth Quarter Doubts Real?

■ Up to the moment, steel users are showing no great eagerness to get on the books for the fourth quarter.

Although steel salesmen express some surprise, it's probably a reaction from the strike and continuing reports of "no progress" in negotiations. Even so, some mills are talking privately about a slower fourth quarter than they were a week or two ago.

One producer looks at it this way: For the first 30 days after the strike, firm orders should equal 110 pct of capacity. For the second 30 days, firm orders may taper off to a mere 45 pct. This estimate does not reflect tonnage that is reserved for regular large customers.

If the strike runs a month or more, most orders now booked will be nailed down firmly. Tightest product probably will be cold-rolled sheets.

Meanwhile, operations continue at mills not covered by USW contracts, or where the contracts have been extended. Complete list appears below.

Company	Location	Ingot Capacity (tons)	Contract Expiration
ALABAMA			
Kilby Steel Co.	Anniston	34,020	*
Porter, H. K., Co., Inc. Connors Steel Div.	Birmingham	115,000	9/1/59
Southern Electric Steel Co.	Birmingham	66,000	8/31/59
ARIZONA			
Yuba Consolidated Industries, Inc. Western Rolling Mills Div.	Helena	60,000	*
CALIFORNIA			
Armco Steel Corp.	Torrance	50,000	*
Pacific States Steel Corp.	Niles	216,000	E
Southwest Steel Rolling Mills, Inc.	Los Angeles	45,000	8/1/59
CONNECTICUT			
Carpenter Steel Co. Carpenter Steel of New England, Inc.	Bridgeport	84,000	E
FLORIDA			
Florida Steel Corp.	Tampa	43,000	*
GEORGIA			
Atlantic Steel Co.	Atlanta	400,000	E
ILLINOIS			
Columbia Tool Steel Co.	Chicago Hgts.	6,600	*
Finkl, A., & Sons Co.	Chicago	33,600	*
Granite City Steel Co.	Granite City	1,440,000	E
International Harvester Co. Wisconsin Steel Works	S. Chicago	1,200,000	*
Keystone Steel and Wire Co.	Peoria	475,000	*
Laclede Steel Co.	Alton	600,000	8/31/59
INDIANA			
Borg-Warner Corp. Ingersoll Steel Div.	New Castle	64,000	*
Continental Steel Corp.	Kokomo	420,000	8/14/59
Joslyn Mfg. & Supply Co.	Chicago	37,500	8/14/59
KENTUCKY			
Jessop Steel Co. Green River Steel Corp.	Owensboro	183,190	E
MARYLAND			
Eastern Stainless Steel	Baltimore	80,000	E
MICHIGAN			
Allegheny Ludlum Steel Corp.	Ferndale	3,000	*
Ford Motor Co.	Dearborn	1,898,000	*
MISSISSIPPI			
Mississippi Steel Corp.	Flowood	45,000	*
NEW YORK			
Simonds Saw & Steel Co.	Lockport	21,600	8/31/59
Wickwire Bros., Inc.	Cortland	32,440	10/1/59
OHIO			
American Compressed Steel Corp.	Cincinnati	21,600	*
Armco Steel Corp.	Middletown	2,557,000	*
Copperweld Steel Co.	Warren	660,000	E
Detroit Steel Corp.	Portsmouth	1,500,000	E
Republic Industrial Corp. Industrial Forge & Steel, Inc.	Canton	84,000	8/31/59
Timken Roller Bearing Co.	Canton	700,000	8/24/59
Universal-Cyclops Steel Corp. Empire-Reeves Steel Corp.	Mansfield	800,000	8/31/59
OREGON			
Gilmore Steel & Supply Co., Inc. (Oregon Steel Mills)	Portland	150,000	8/14/59
PENNSYLVANIA			
Alan Wood Steel Co.	Conshohocken	800,000	**
Alco Products, Inc.	Latrobe	108,652	**
Armco Steel Corp.	Butler	557,000	*
Baldwin-Lima-Hamilton Corp. Standard Steel Works Div.	Burnham	188,710	8/31/59
Carpenter Steel Co.	Reading	87,500	*
Edgewater Steel Co.	Oakmont	117,600	8/31/59
Erie Forge & Steel Corp.	Erie	284,000	8/31/59
Firth Sterling Steel Corp.	McKeesport	20,040	E
General Tire & Rubber Co. Byers, A. M., Co.	Ambridge	90,000	E 8/31/59
Harsco Corp. Harrisburg Steel Co. Div.	Harrisburg	100,750	11/15/59
Heppenstall Co.	Pittsburgh	55,550	7/31/59
Heppenstall Co. Midvale-Heppenstall Co.	Philadelphia	157,700	-
Jessop Steel Co.	Washington	35,800	E
Latrobe Steel Co.	Latrobe	24,000	8/14/59
Merritt-Chapman & Scott Corp. Milton Steel Div.	Milton	90,000	11/30/59
Mesta Machine Co.	New Castle	68,000	*
Mesta Machine Co.	W. Homestead	105,000	*
National Forge & Ordnance Co.	Irvine	25,000	*
Pencoyd Steel & Forge Corp.	Philadelphia	15,600	5/19/60
Phoenix Steel Tube and Struct. Div.	Phoenixville	360,000	**
Phoenix Steel Plate Div.	Harrisburg	486,750	**
Union Electric Steel Corp.	Carnegie	25,000	E
Vanadium-Alloys Steel Co.	Latrobe	12,000	*
Vanadium-Alloys Steel Co. Colonial Steel Co. Div.	Monaca	30,000	E
Vulcan-Kidd Steel Div.	Aliquippa	9,600	8/15/59
RHODE ISLAND			
Washburn Wire Co.	Phillipsdale	93,000	10/15/59
TENNESSEE			
Knoxville Iron Co.	Knoxville	38,000	*
TEXAS			
Godfrey L. Cabot, Inc. Cabot Shops, Inc.	Pampa	16,200	*
Cameron Iron Works, Inc.	Houston	58,800	*
LeTourneau, R. G., Inc.	Longview	90,000	*
Lone Star Steel Co.	Lone Star (Daingerfield)	800,000	9/7/59
Texas Steel Co.	Ft. Worth	132,450	*
VIRGINIA			
Newport News Shipbuilding & Dry Dock Co.	Newport News	15,000	*
Roanoke Electric Steel Corp.	Roanoke	25,000	*
WASHINGTON			
Isaacson Iron Works, Inc.	Seattle	102,000	*
WEST VIRGINIA			
National Steel Corp. Weirton Steel Div.	Weirton	3,330,000	*
Porter, H. K. Co., Inc.	Huntington	110,000	4/30/60

E = Contract extended.
* = Not organized by USWA.
** = 30 days after U. S. Steel Agreement.

COMPARISON OF PRICES

(Effective Aug. 4, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Aug. 4 1959	July 28 1959	July 7 1959	Aug. 5 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bars	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.138¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

	Aug. 4 1959	July 28 1959	July 7 1959	Aug. 5 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.50	$43.50	$43.50	$44.50
No. 1 steel, Phila. area	39.50	39.50	37.50	37.50
No. 1 steel, Chicago	36.50	35.50	36.50	44.50
No. 1 bundles, Detroit	37.50	37.50	37.50	37.50
Low phos., Youngstown	44.50	44.50	44.50	46.50
No. 1 mach'y cast, Pittsburgh	52.50	52.50	51.50	51.50
No. 1 mach'y cast, Phila.	50.50	50.50	49.50	49.50
No. 1 mach'y cast, Chicago	59.50	59.50	59.50	52.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$39.83	$39.50	$39.17	$42.17
No. 2 bundles	27.33	27.00	26.67	29.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	$15.38
Foundry coke, prompt	18.50	18.50	18.50	17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	31.50	26.50
Copper, Lake, Conn.	30.00	30.00	31.50	26.50
Tin, Straits, N. Y.	102.00†	101.875*	103.00	95.875
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.80	11.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.80
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. * Revised.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Market Stays Strong Despite Strike

Scrap prices are so far resisting any downward pull due to the steel strike.

Strength of dealer prices in the Midwest pushes up the IRON AGE Composite.

▪ The market remained strong this week despite the lengthening steel strike.

In most major sales areas prices held firm with neither buyers nor sellers willing to give ground. At Chicago dealer stubbornness pushed the price of No. 1 heavy melting up $1. The advance came when dealers refused offers based on last week's prices and brokers covered old orders at higher prices. As a result No. 1 heavy melting at Chicago rose to $36-$37.

This tightening of dealer prices at Chicago, coupled with price stability elsewhere, brought an increase in The IRON AGE No. 1 heavy melting Composite to $39.83.

Various factors contribute to the underlying strength of the market. For one thing dealers expect a heavy demand for scrap once the strike ends.

In the port districts a continuing brisk export business is another steadying influence.

Supply is also exerting pressure under prices. Automotive lists are reduced in size for August. Plant vacations have cut down the scrap supply in some areas.

For all these reasons, dealers remain optimistic about the market. There is some long-range doubt, however, that a prolonged steel strike may dry up scrap demand and torpedo current prices.

Pittsburgh—With the steel strike in its third week, scrap buyers and sellers are in a price deadlock. Neither side is anxious to make a move. Sellers are holding out for higher prices. At the same time, consumers are not ready to bid strongly for scrap. A quotation of $44 by one mill for a post-strike delivery of No. 1 heavy melting attracted no broker interest.

Chicago—Dealer refusals to sell No. 1 heavy melting at last week's price brought a $1 increase to $36-37. Other grades showed strength, also moved up $1. No. 2 heavy melting advanced to $34-35. No. 2 bundles are going for $25-26. Scrap collection in the district remains at low levels.

Philadelphia — Prices remained firm at last week's levels. Despite the strike, the market has an undertone of strength. Export activity is an important factor. Four boats were loaded for export last month. At least three more will go out during August.

New York—Export demand continued to bolster prices for steelmaking scrap. Blast furnace grades, however, fell at least $1 a ton because of the strike.

Detroit — The market remained firm because of a variety of factors. August industrial lists were virtually unchanged from those in July. In addition, Canadian interest in scrap set a floor under prices. Finally, dealers anticipate strong demand when the strike ends. Some weakness was noted in No. 2 heavy melting which dropped $2 and No. 2 bundles which dropped $1.

Cleveland—Dealer prices held up although only two area steel mills are in the market. Because auto list tonnage for August is only half as large as normal, the dealers expect a strong market when the strike ends. Top dealer material remains scarce with vacations reducing the scrap supply from plants.

St. Louis—The market showed extreme strength with not enough scrap available to meet mill demand. Some mills are paying special prices to get out-of-the-area supplies. The demand for premium grades is great.

Birmingham — The market for openhearth scrap is at a standstill because of the strike. However foundry and cast grades are still moving well. One mill has announced intentions to buy soon. Brokers and dealers are watching to see what effect this will have on prices.

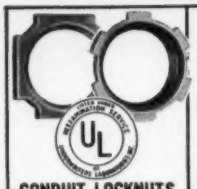
Cincinnati — Steelmaking grades dropped $2 with activity at a low ebb. One mill reduced scrap intake because of a rebuilding program. The strike kept others out of the market. Some advance orders for September delivery are available at current prices.

Buffalo — Market remains unchanged. There is little activity and no price changes. Even late scrap shipments have been halted by the strike.

Boston—Prices of prime grades remained steady. But other prices declined. No. 1 busheling dropped $1, while machine shop and shoveling turnings were down about $2.

West Coast—The market continues weak in all three West Coast cities. Prices for most grades dropped $2 per ton in Los Angeles. About 75,000 tons of export scrap is scheduled to be shipped to Japan in August.

Houston—Export activity dominates the market. The exporters are quoting prices ranging from $3 to $4 over prevailing domestic prices. Domestic buying is at a standstill.



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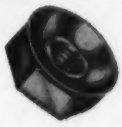

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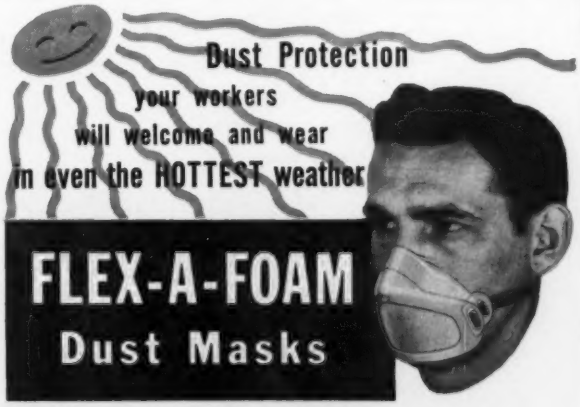

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SCRAP PRICES *(Effective Aug. 4, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	47.00 to 48.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	52.00 to 53.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	36.00 to 37.00
No. 1 factory bundles	42.00 to 43.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Low phos. forge crops	50.00 to 51.00
Low phos. punch'gs plate, ¼ in. and heavier	47.00 to 48.00
Low phos. 2 ft and under	45.00 to 46.00
No. 1 RR hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	51.00 to 52.00
Rerolling rails	61.00 to 62.00
Rails 2 ft and under	56.00 to 57.00
Angles and splice bars	52.00 to 53.00
RR steel car axles	66.00 to 67.00
RR couplers and knuckles	50.00 to 51.00
No. 1 machinery cast.	59.00 to 60.00
Cupola cast.	52.00 to 53.00
Cast iron wheels	44.00 to 45.00
Malleable	60.00 to 61.00
Stove plate	50.00 to 51.00
Steel car wheels	49.00 to 50.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	34.00 to 36.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 bundles	26.00 to 28.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'gs	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	33.00 to 34.00
RR specialties	44.00 to 45.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	44.00 to 45.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	50.00 to 51.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$33.50 to $34.50
No. 2 hvy. melting	27.50 to 28.50
No. 1 dealer bundles	33.50 to 34.50
No. 2 bundles	26.50 to 27.50
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	43.00 to 44.00
Rails, random length	47.00 to 48.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	46.00 to 47.00
Hvy. breakable cast.	42.00 to 43.00
Drop broken cast.	52.00 to 53.00

Youngstown

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	27.50 to 28.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	44.00 to 45.00

Cleveland

No. 1 hvy. melting	$39.50 to $40.50
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	39.50 to 40.50
No. 1 factory bundles	44.50 to 45.50
No. 2 bundles	24.00 to 25.00
No. 1 busheling	39.50 to 40.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	46.00 to 47.00
Drop forge flashings	39.50 to 40.50
Low phos. punch'gs plate	40.50 to 41.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	54.00 to 55.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	115.00 to 120.00

Buffalo

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	19.00 to 20.00
No. 1 RR hvy. melting	40.00 to 41.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	45.00 to 46.00
RR specialties	46.00 to 47.00
Cupola cast.	52.00 to 53.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	57.00 to 58.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	38.00 to 39.00
Elec. furnace, 2 ft & under	36.00 to 37.00
Bar corps and plate	44.00 to 45.00
Structural and plate, 2 ft.	43.00 to 44.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	57.00 to 58.00
No. 1 cupola cast	55.00 to 56.00
Stove plate	55.00 to 56.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	35.00 to 36.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	44.00 to 45.00
Automotive cast.	50.00 to 51.00
Stainless	
18-8 bundles and solids	190.00 to 200.00
18-8 turnings	80.00 to 90.00
430 bundles and solids	85.00 to 95.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	28.00 to 29.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	27.00 to 28.00
Machine shop turn.	8.50 to 9.00
Shoveling turnings	10.50 to 11.00
Clean cast. chem. borings	16.50 to 17.00
No. 1 machinery cast.	35.00 to 36.00
Mixed cupola cast.	34.00 to 35.00
Heavy breakable cast.	32.00 to 33.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
Machine shop turn.	17.00
Cast iron borings	17.00
No. 1 cupola cast.	47.00

Los Angeles

No. 1 hvy. melting	$38.00
No. 2 hvy. melting	36.00
No. 1 dealer bundles	33.00
No. 2 bundles	18.00
Machine shop turn.	16.00
Shoveling turnings	18.00
Cast iron borings	18.00
Elec. furn. 1 ft and under (foundry)	$47.00 to 48.00
No. 1 cupola cast.	45.00

Seattle

No. 1 hvy. melting	$35.00
No. 2 hvy. melting	33.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$32.25
No. 2 hvy. melting	28.25
No. 1 dealer bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Bush., new fact., prep'd.	32.25
Bush., new fact., unprep'd	26.25
Machine shop turn.	14.00
Short steel turn.	17.00
Mixed bor. and turn.	13.00
Rails, rerolling	37.00
Cast scrap	$46.50 to 48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00
No. 2 hvy. melting	31.00
No. 2 bundles	20.00
Machine shop turn.	16.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$45.00 to 46.00
Unstripped motor blocks	38.50 to 39.50
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	28.00 to 29.00

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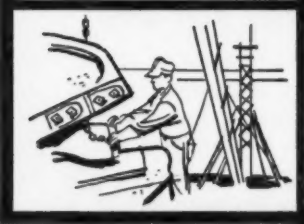
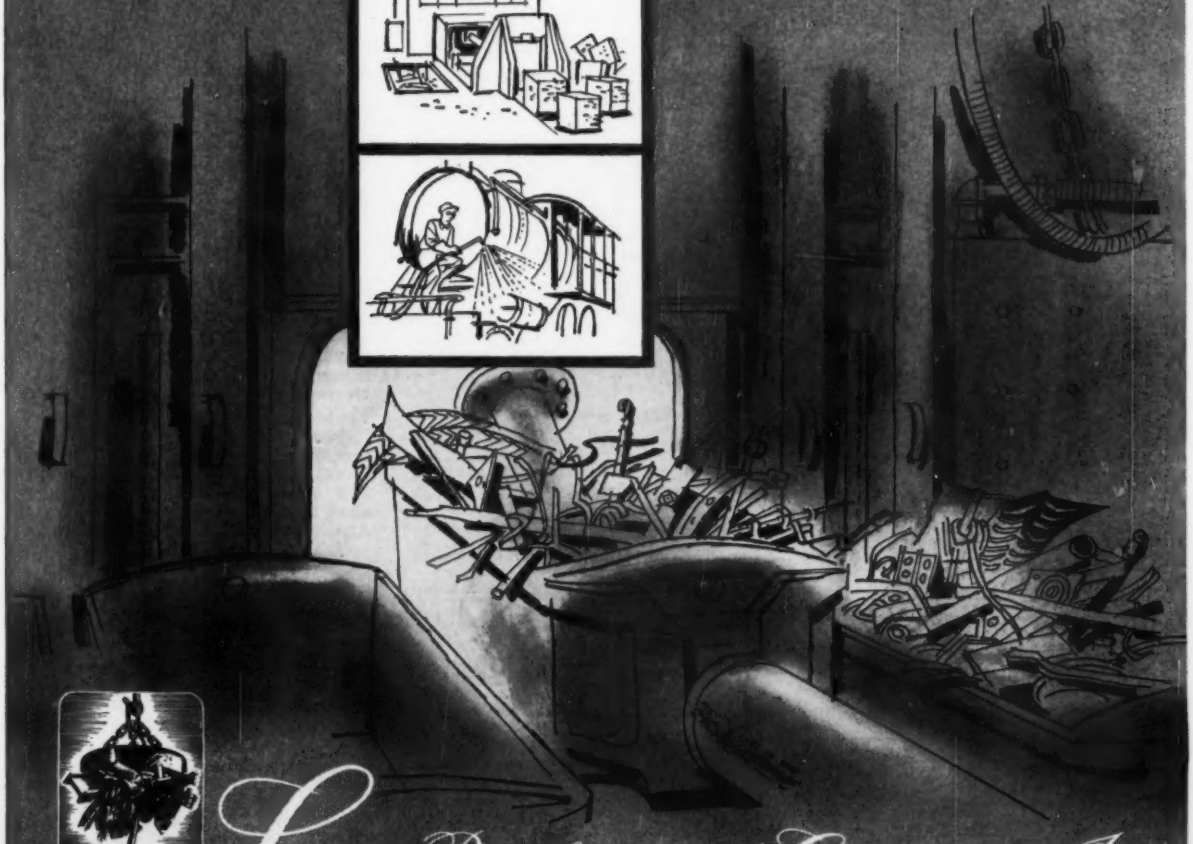


For over half a century our experience, personnel, equipment and key office locations have contributed to the steady growth of the iron and steel industry. Possibly our facilities may help you solve a problem in iron or steel scrap—no matter how big or small.



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IMPORT & EXPORT — **LIVINGSTON & SOUTHARD, INC.,** 99 Park Avenue, New York, N. Y. • *Cable Address:* **FORENTRACO**

Aluminum Price Hike in Doubt

Labor peace at producers' plants means 1959 will likely be one of the industry's best years.

But producers may have to skip, or at least postpone, a price increase.

▪ The labor peace at the plants of major U. S. aluminum producers practically guarantees that 1959 will be one of the best years ever for the industry.

The aluminum makers held off United Steelworker president David McDonald's attempt to get a settlement favorable enough to use as a club against the steel industry.

Aluminum contracts have been extended to 30 days after a steel settlement, or to Nov. 1, whichever comes first. There is little doubt that if Nov. 1 sees steel still struck, the aluminum companies and their unions will extend contracts again. Both have already made their intent to wait on steel clear.

But peace will have a price.

Most important: The aluminum price hike which the trade had come to expect this summer may not come. Or it may be 1960 before aluminum companies bump prices. In any case the aluminum producers must wait for the economic factors to be established.

Also: Aluminum shipments, and probably production, will tail off somewhat from the record levels of the first half.

Affecting Price—There are several factors in the price picture. Holding the aluminum price in check, on the short term, is the uncertainty of what the new contract with the unions will cost. The settlement is retroactive to Aug. 1, but has to wait for the steel settlement. And that may not come soon. Then it will take another few weeks for the details to be translated into aluminum. And sales late in the year are based to a great extent on inventory manipulations by customers for tax purposes, so a price hike then looks unlikely.

The healthy aluminum net earnings also argue for caution in price policies. The dwindling margin between sales and profits was a big argument in the case for a higher aluminum price.

Big Earnings — Alcoa, for instance, made almost $29 million net on almost $425 million sales in the first half. In the first half of 1958 the net was $19 million on $366 million sales. So the profit margin was up to almost 7 pct from the slightly more than 5 pct in the same period last year.

On the long haul, however, the pressure to hold the aluminum price goes deeper than that. Competitors are holding prices down, or are determined to do so, and in some cases cuts may well come. This includes steel, magnesium, copper, and even some plastic.

Making More—Another factor: Some say aluminum producers have really managed a price increase in the last few months even though the official prices haven't changed. Producers have been discounting less and less, dropping special allowances including freight, and starting to bill bigger for extras. This may prove to be enough, at least for the time being.

The rate of aluminum shipments will fall because fabricators and warehouses actually hedged much more than originally thought. Many will want to work off some of the hedged metal.

Lead and Zinc

Get ready for some more fuss over imports. A group of 15 mining states' Senators is demanding a new investigation of lead and zinc imports. They say finished and semi-finished products, not covered by the import quotas, are starting to arrive in the U.S. in large quantities. They want the Tariff Commission to see if this is "beginning to circumvent and frustrate quotas."

Tin prices for the week: July 29 —101.75; July 30—101.625; July 31 — 101.875; Aug. 3 — 102.00; Aug. 4—102.00.*

*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in APRIL based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	30.52
Copper, Lake	30.52
Straits Tin, New York	102.309
Zinc, E. St. Louis	11.00
Lead, St. Louis	11.80
Aluminum ingot	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	30.00	31.50	7/13/59
Copper (CS)	29.50	29.00	7/16/59
Copper (L)	30.00	31.50	7/13/59
Lead, St. L.	11.80	11.30	8/7/59
Lead, N. Y.	12.00	11.50	8/7/59
Magnesium ingot	36.00	34.50	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	150-160	162-182	8/1/59
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; Other primary prices, pg. 119.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	⅝-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93 3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.13	.....	51.36	54.32
Brass, Yellow	47.24	47.78	47.18	50.65
Brass, Low	50.03	50.57	49.97	53.34
Brass, R L	51.02	51.56	50.96	54.33
Brass, Naval	51.90	.....	45.71	55.31
Munts Metal	49.95	.....	45.26	.....
Comm. Bz.	52.55	53.09	52.49	55.61
Mang. Bz.	55.64	.....	49.30	.....
Phos. Bz. 5%	73.92	.....	74.42	.....

Free Cutting Brass Rod 31.81

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.75-$6.25; alloy, $7.75-$10.00; Bar, HR or forged, commercially pure, $4.25-$5.00; alloy, $4.25-$7.50; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.30
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb) ... $1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 33.30 to 42.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz..... $75 to $85
Lithium, 98% ..... $11.00 to $14.00
Magnesium sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $234 to $236
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz.. $18 to $20
Platinum, dollars per troy oz.. $77 to $80
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 29.25
- No. 120 ..... 28.00
- No. 123 ..... 27.00

80-10-10 ingot
- No. 305 ..... 33.50
- No. 315 ..... 31.50

88-10-2 ingot
- No. 210 ..... 42.00
- No. 215 ..... 37.75
- No. 245 ..... 33.50

Yellow ingot
- No. 405 ..... 23.75

Manganese bronze
- No. 421 ..... 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 25.00-25.25
- 0.60 copper max. 24.75-25.00

Piston alloys (No. 122 type) .. 26.75-27.75
No. 12 alum. (No. 2 grade) ... 23.50-24.00
108 alloy 24.00-24.50
195 alloy 26.50-27.50
13 alloy (0.60 copper max.) ... 24.75-25.00
AXS-679 (1 pct zinc) 23.75-24.75

(Effective Aug. 3, 1959)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 24.00-25.00
Grade 2—92-95% 22.75-23.75
Grade 3—90-92% 21.75-22.75
Grade 4—85-90% 21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19⅝	17⅝
Red brass	22⅞	22⅛
Comm. bronze	23⅞	23⅛
Mang. bronze	18⅝	17½
Free cutting rod ends.	18¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25¼
No. 2 copper wire 23¾
Light copper 21½
*Refinery brass 23¼
Copper bearing material 22¼
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25¼
No. 2 copper wire 23¾
Light copper 21½
No. 1 composition 20½
No. 1 comp. turnings 20
Hvy. yellow brass solids 14½
Brass pipe 15½
Radiators 16

Aluminum

Mixed old cast. ..... 14 —15
Mixed new clips ..... 16 —17
Mixed turnings, dry ..... 14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 23 —23½
No. 2 copper wire ..... 21 —21½
Light copper ..... 19 —19½
Auto radiators (unsweated). 13¼ —13¾
No. 1 composition ..... 17½—18
No. 1 composition turnings.. 16 —16½
Cocks and faucets ..... 13½—14
Clean heavy yellow brass ... 12 —12¼
Brass pipe ..... 13½—14
New soft brass clippings .... 14 —14½
No. 1 brass rod turnings .... 11¼—11¾

Aluminum

Alum. pistons and struts .... 7½— 8
Aluminum crankcase ..... 11¼—11¾
1100 (2s) aluminum clippings 15 —15½
Old sheet and utensils ..... 11¼—11¾
Borings and turnings ..... 7 — 7½
Industrial castings ..... 11¼—11¾
2020 (24S) clippings ..... 12½—13

Zinc

New zinc clippings ..... 4¾— 5¼
Old zinc ..... 3¼— 3½
Zinc routings ..... 2 — 2¼
Old die cast scrap ..... 1¾— 2

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 37-40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 30-32
Old sheet Monel 26-28
Nickel silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 7 — 7¼
Battery plates (dry) ..... 2 — 2¼
Batteries, acid free ..... 1⅞— 2⅛

Miscellaneous

Block tin ..... 77 —78
No. 1 pewter ..... 59 —60
Auto babbitt ..... 40 —41
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 9½—10
Monotype ..... 9½—10
Lino. and stereotype ..... 8½— 9
Electrotype ..... 7 — 7½
Hand picked type shells .... 5¼— 5¾
Lino. and stereo. dross ..... 2¼— 2¾
Electro dross ..... 2¼— 2¾

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B3*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				15.55 *C11*
	Harrison, N. J.													
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R5,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,13*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W5*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Aug. 3, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Hollowware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1, Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective Aug. 3, 1959)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Aug. 3, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Chicago, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective Aug. 3, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium..					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.15; 1 side, 36.20.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *Ul*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *Ul*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *Ul*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	.....	.....
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*Ul*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100, 110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective Aug. 3, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3****	173	190	.....	.....	189	9.00	9.675
Atlanta *A8***	175	192	.....	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	.....	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	.....	212	193	9.00	9.55
Duluth *A5*	173	187	.....	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	.....	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	.....	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	.....	219	203	9.10	9.775
Johnstown *B3***	173	190	174	.....	196	9.00	9.675
Joliet, Ill. *A5*	173	187	.....	212	193	9.00	9.55
Kokomo *C9*	175	189	.....	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	.....	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	.....	.....	213	9.60	10.15
Rankin, Pa. *A5*	173	187	.....	.....	193	9.00	9.55
So. Chicago *R3*	173	187	.....	.....	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
Sparrows Pt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Chicago	.....	.....	.....	15.60	.....
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W.G.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox..	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube.....	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel..	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1¼" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished	
⅞ in. and smaller	65

Rivets	*Base per 100 lb*
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws	*Discount (Packages)*
	Full Finished H. C. Heat Treat
New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54	42
¾", ⅞", and 1" diam. x 6" and shorter	38	23
⅝" diam. and smaller x longer than 6"	..	..
¾", ⅞", and 1" diam. x longer than 6"	..	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ½" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅝" diam. & smaller 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	38.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	18.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.20
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*				
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston**	.10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45*	16.79	16.69	20.29	21.04
Buffalo**	.15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60*	16.34	16.45	19.01	20.80
Chicago**	.15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	16.20	16.10	19.70	20.45
Cincinnati**	.15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68*	16.52	16.42	20.02	20.77
Cleveland**	.15	8.62[1]	9.61	11.02	10.36	8.76	9.63	9.36	11.40*	16.31	16.21	19.81	20.56
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit**	.15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	15.46	16.38	18.81	21.03
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**		9.95[1]	11.55	12.20	11.55	10.00	10.00	9.10	14.20	17.30	16.45	21.30	20.80
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee**	.15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	16.34	15.34	19.84	19.09
New York**	.10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35*	16.16	16.50	20.10	20.85
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia**	.10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05*	16.58	16.48	20.03	20.83
Pittsburgh**	.15	8.62	9.61	10.95	10.36	8.52	9.24	8.62	11.40*	16.20	16.10	19.70	20.45
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25
San Francisco**	.10	11.00	11.95[2]	11.50	12.25	11.00	10.95	10.75	15.20	17.05	16.35	21.05	20.60
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	17.15	17.80	20.65	22.20
Spokane**	.15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.55	22.35
St. Louis**	.15	9.07	10.73	11.02	10.73	9.00	9.76	9.17	11.43	16.58	16.48	20.08	19.33
St. Paul	.15	8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49		15.41		20.83

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—¼" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—⅝-2 15/16; * C 1018—1" rounds.

†† 10¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter.

(Effective Aug. 3, 1959)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa , *C2.*

(Effective Aug. 3, 1959)

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench: metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

Write for sample on company letterhead

THE DYKEM COMPANY
2303G North 11th St. • St. Louis 6, Mo.

CUT SCRAPER TIME

END NIGHT CLEANUP & MORNING REBLUING

DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

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MULTIPLE SPINDLE

CHUCKING MACHINES

Four, Five, Six, Eight Spindles • Work and Tool Rotating Type

GOSS & DE LEEUW MACHINE CO. KENSINGTON, CONN.

C ELECTRIC FURNACE STEEL CASTINGS

are engineered to *YOUR* specific requirements

"C" steel castings are CLEAN steel castings of uniform structure that will minimize machining and assembly costs, permit of greater freedom and efficiency of design and add to your product the recognized strength, endurance and desirability of steel. C steel castings, foundry engineered from pattern to finished casting can be had in

CARBON, ALLOY OR STAINLESS STEEL SAND OR SHELL MOULDED

The technical experience and knowledge of our engineering staff are at your service. Write, phone, or call.

CRUCIBLE STEEL CASTING CO.

LANSDOWNE 1, PENNA.

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 37.25
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 39.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.

0.10% max. C	$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload bulk	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% (Bulk) P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 2000 lb up to carloads	17.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	22.45	21.25
98% Si, 1.0% Fe	21.95	20.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Aug. 3, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo .....

$1.50

Ferrocolumbium, 58-62% Cb, 2 in. x D, delivered per pound

Ton lots	$3.45
Less ton lots.....	3.50

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta .....

$3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo..

$1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton .....

	$120.00
10 tons to less carload	$131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti .....

$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti .....

	$1.50
Less ton lots	$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton .....

$240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered .....

$2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. .....

	$1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa.	$1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 ....

$1.38

Zirconium silicon, per lb of alloy

35-40% del'd, carloads, bulk..	26.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload .....

$5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots... F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

	$1.20
10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots .....

2.15

RAILWAY EQUIPMENT

FOR SALE

Used "As Is" and Reconditioned

RAILWAY CARS

All Types

SERVICE-TESTED

FREIGHT CAR REPAIR PARTS

For All Types of Cars

3—DIESEL-ELECTRIC LOCOMOTIVES

General Electric

44-Ton **Standard Gauge**

In ICC Operating Condition

STANDARD GAUGE CARS

10 Covered Hopper Cars

70-Ton Capacity

Ore Hopper Cars

660 Cubic Feet

40- AND 50-TON CAPACITY

RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon

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New York 17, N. Y.
Phone: YUkon 6-4766

"ANYTHING containing IRON or STEEL"

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

MOTOR GENERATOR SETS

(3)—3500-KW Allis-Chalmers 5-unit sets consist of (2) 1750-KW Gen., 350/700-VDC, (1) 5000-HP syn. motor, 13800/6900/4160-V, 3 hp., 60 cy., (2) exciter generators.

• • •

(1)—S. & S. 5-unit set consists of—(1) 2500-HP syn. motor, 11000/4160-V., 3 ph., 60 cy., (1) 1060-KW Gen. 600-VDC, (2) 760-KW Gen. 600-VDC, (1) exciter gen. (Will split this set to fit your requirements).

• • •

(1)—200-KW Set consisting of (2) 1000-KW gen. 600-VDC, (1) 2500-HP syn. motor, 11000/-4160-V., 3 ph., 60 cy.

• • •

(1)—1875-KW Whse. 2-unit set—(1) 250-VDC gen., (1) 2700-HP syn. motor, 13800/6900/-4160-V., 3 ph., 60 cy.

• • •

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Outside Area Sales Hold Up Detroit

Used machinery sales trail the auto pace, but are up over last year by 10 to 25 pct.

More than half of the current business is from outside of the area—East, South and West.

▪ The used machinery market in Detroit hasn't quite kept pace with the 30 pct boost in the production and sales of automobiles.

Machinery dealers admit their business is up 10 to 25 pct over a year ago, but they say most of the volume increase has come from outside the area. The East, South and West account for 50 to 75 pct of current business.

Cautious—Detroit's smaller shops are still displaying a wariness which has grown out of their long experience with the cyclical ups and downs of the auto industry.

For the most part, this year has been one of ups and next year looks like more of the same. But to the small manufacturer, looks can be deceiving. At this time a year ago there were a lot of shoppers wandering the aisles of the used machinery display rooms.

Just Enough—Some have come back to buy, others are coming back for another look and placing some orders. In both cases, however, they are buying the absolute minimum to do the job.

But Detroit is traditionally a machinery surplus area. The rest of the country likes to shop the well stocked warehouses. Now buyers from expanding industries in the South and West are finding what they want in Detroit.

Looks Strong — Movement of fabricating equipment is fairly brisk. Rolls, brakes, shears, roller levelers and big presses are moving fairly well. There's some action in turret lathes, and radial drills.

For the most part, prices are firm. Some increases could show up in areas such as automatic lathes, heavy presses and large production mills where the demand for good, late-model equipment is strong.

Not All Good—But there are soft spots in the market. Government surplus tools released to the market help hold prices down. And there is some evidence of softening prices for standard tools, such as grinders.

From all indications, price stability present in the market should continue for the next few months. There's enough activity to keep prices from falling very much. And there's enough competition around to keep them from showing any sharp increases.

Telling Its Age

Serial Number Reference Book for Metalworking Machinery, published by Industrial Publishing Corp., Detroit, lists over 95 pct of machine tools produced since 1920. It permits a buyer of used tools to establish the age of almost any piece quickly, using the serial number.

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8' x ⅛" Bertsch Initial Type
12' x ¼" Bertsch Initial Type
32' x ¾" BALDWIN PYRAMID TYPE—Late

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8' x ⅛" Dreis & Krump, 12" Finger Extension

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90 ton Niagara, Model 90-8-10
10' x 10 Ga. Clearing

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5 ton	P&H	40' Span 220 Volt D.C.
10 ton	P&H	55' Span 230/3/60
10 ton	P&H	39' Span 230 Volt D.C.
10 ton	Milwaukee	57' Span 230 Volt D.C.
10 ton	Shaw	48' Span 230 Volt D.C.
10 ton	Whiting	75' Span 220/3/60 A.C.
10 ton	Shaw	120' Span 230 Volt D.C.
15 ton	Milwaukee	56' Span 440/3/60 A.C.
5 ton	Aux	Arr. for Magnet Opr.
30 ton	Shaw	70' Span 230 Volt D.C.
120 ton	Niles	67' Span 230 Volt D.C.
120 ton	Shepard Niles	77' Span 220/3/60 A.C.
15 ton	Shepard Niles With 5 ton Auxiliary	55' 6" Span 220/3/60
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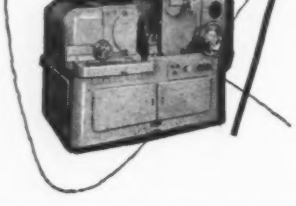

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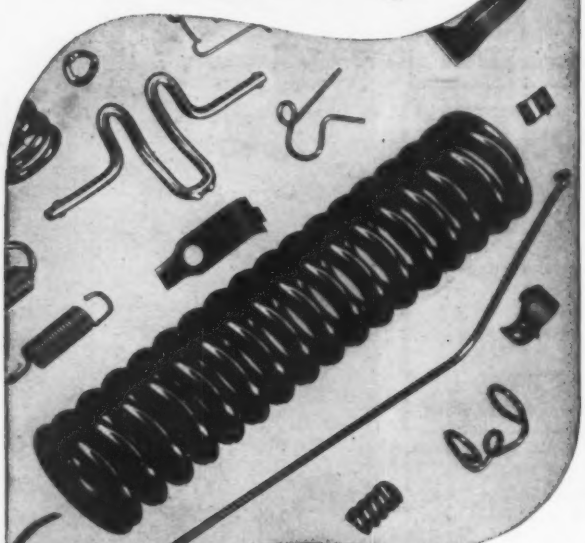

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